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## THE ICE BLOCKADE.

IT WAS THE WORST EVER ENCOUNTERED ON THE LAKES—EXPENSE WILL AGGREGATE \$15,000 TO \$20,000, TO BE DIVIDED AMONG 100 VESSELS.

Exact figures regarding the expense attached to the extensive operations of vessel owners in the ice jam at the head of Lake Erie and on Lake St. Clair during the past ten days are not as yet available, but they will be published in detail for the information of all concerned. Bills have not as yet been entirely collected, and it is deemed advisable therefore to withhold anything in the way of an official statement, but it is more than probable that the total expense will aggregate \$15,000 to \$20,000 to be divided among some 100 vessels. There were engaged in the work all the time the two Detroit ferries Promise and Fortune, as well as the tugs Mason and Protector, and part of the time the ferries Excelsior and Sapho of Detroit and Conger of Port Huron. These vessels were hired at fixed prices per day, in addition to other tugs that were used for special work. The expense otherwise will be confined largely to bills for the supply of fuel and provisions, to telegraph and telephone items and to small sums to be paid to those who were engaged in furnishing reports regarding the movements of the ships, their condition in the ice, etc.



MR. H. COULBY.

Vessel men in all parts of the lake, who are acquainted with Mr. H. Coulby and his management for several years past of the transportation department of Pickands, Mather & Co., which involves the operation of some fifty steel vessels, had every confidence in his ability to handle the ice problem when it was announced that the direction of affairs had been entrusted to him by the pool. Mr. Coulby's undertaking was successful and he is deserving of a great deal of credit from the vessel interests for unceasing work, night and day, during a period of nearly two weeks, but when the matter is referred to, he seems more anxious to divert attention to the assistance of Capt. James Davidson, J. W. Westcott and others, than to take any glory to himself. He is used to hard work. He is one of three or four men in the big ore firms of Cleveland whose duties during the season of navigation cover a volume of work that would stagger the man of ordinary business affairs. The business is well organized, however, down to a point of detail that is equal to the best systems of the big railways of the country.

Referring to the adjustment of expense involved in the ice operations Mr. Coulby said: "To my mind it is a matter that must be governed by the law of general average. Every ship that passed up or down after the ice organization became operative on the morning of the 13th of December should bear an equal portion of the expense. It should be prorated according to the number of vessels benefited by the organization, and the term 'benefit' should be applied on the principle of the beneficial organization that cares for a man in sickness. One member of such an organization may receive the care of a physician and get twenty bottles of medicine, while another gets absolutely nothing. So it was with the ship. Some of them worked through the ice without assistance, but the ferries and tugs were there for them if they were needed. I am particularly anxious that the vessel men should appreciate the assistance we received from Duff & Gatfield of Amherstburg, from Mr. Grubb, keeper of the light at Point au Pelee, and from the telephone people at Seamington and Lambton. If it were not for the help of these people our work would have been greatly delayed."

## MORE ORDERS FOR SHIPS.

A letter to the Review from Baltimore, Md., states that officers of the York River Steamship Co., which operates a line of steamers in connection with the Southern Railway, has taken steps looking to the construction of a fine new passenger steamer. Plans and specifications have been prepared and bids invited from the Cramps of Philadelphia, the Maryland Steel Co. of Sparrows Point, Md., and the Harlan & Hollingsworth Co. of Wilmington, Del. The new vessel will be a 2,000-ton propeller, on the general plan of the steamer Atlanta of the above mentioned line, but with several improvements over that vessel. When completed the new vessel will take the place of the Charlotte, a smaller craft, on the line between Baltimore and Norfolk, and the Charlotte will be held in reserve as an emergency ship.

It is also reported that the Harlan & Hollingsworth Co. is about to sign a contract for the construction of a vessel for the Red D line. She will be a twin-screw steamer of 275 feet length.

Fire commissioners of Detroit, Mich., have decided to include an item for the construction of a new steel fire boat in the estimates for next year. Inasmuch as numerous petitions have recently been received from prominent firms asking for better fire protection in the manufacturing district of Detroit, there is a probability that the recommendation will be granted.

At a recent builder's trial the torpedo boat Rowan attained a speed of 25 knots, with occasional bursts of 26 knots.

## CIVIL ENGINEER AND NATIONAL PUBLIC WORKS.

Many civil engineers throughout the United States, and especially those who have been connected with government works—Canals, rivers and harbors, etc.—are very outspoken in opposition to the methods of the army engineer corps in the carrying out of these national public works. At a recent meeting of the Detroit Engineering Society, the president, Geo. Y. Wisner, read a paper on "The Civil Engineer and National Public Works." Speaking of national progress he said that previous to this year advancement has been almost entirely along commercial lines and that our system of public works has gradually passed from civil to military control, a condition of affairs which, compared with the systems of public works in European countries, seems somewhat anomalous.

"The continental systems, strictly under civil control," said Mr. Wisner, "secure to the service of the government engineers eminent for their ability and practical experience, and whose works and writings are the basis and plans of many of the most important public works in those countries. One of the worst features of our system is the method of handling the funds appropriated for the carrying on of national improvements. There is five times too much clerical work done which in no way protects the government or public from fraud. It is true that the army officers are not responsible for the regulation under which their accounts are audited, but it is equally true that by making no protest against the wasteful and unbusinesslike methods required in government engineering, they become partners to the transaction. The expediency and amount of expenditure seems to be of little moment compared with the form of the receipt and the color of the ink used. The system is a direct bid for fraud on the part of chief clerks who become so accustomed to doctoring bills and vouchers that they sometimes forget where to stop. A system of public works which admits of unseemly quarrels between departments as to which shall have charge of different works, which allows the duplication of work and consequent waste of funds and the disbursing of sums largely in excess of what they should be; whose members are likely to be court-martialed and to have their reputations and fortunes wrecked for not complying with regulations which it is probable every officer in the service is compelled to violate in order to not subject important works under their charge to serious delays and losses, would seem to verify a certain senator's statement that we have the worst system of national public works on the face of the earth."

In conclusion Mr. Wisner said that the necessity caused by the war with Spain for an increase of 15 per cent in the number of officers of the engineer corps no longer existed, and that if the army was to be largely increased, the graduates of West Point should be given fortification work to do, for which they are educated, and give the civil engineers and business men a show in engineering and public improvements.

## THE BESSEMER FLEET.

It was announced, a day or two ago, that every captain in the employ of the Bessemer Steamship Co. had already received his appointment for next year. The assignment of vessels for the different captains will not, according to custom, be made until spring. Following is the list of names, which includes mates of steamers, who are paid \$100 a month during the navigation season, and who are practically on equal footing with the captains of the tow barges: E. M. Smith, R. E. Byrns, C. E. Moody, John Lowe, F. W. Stenton, H. W. Stone, W. H. Campau, Harry Gunderson, John Ward, S. C. Allen, J. S. Van Rensselaer, H. A. Byrns, F. E. Ingraham, S. E. Lewis, W. S. Hoag, Matthew Langel, G. L. Durand, Arnold Nordahl, O. W. Holdridge, A. McArthur, Frank Rice, A. J. Montague, P. A. Peterson, W. J. Hunt, Thomas H. Bakewell, H. J. Regan, Edward Dryble, F. S. Tear, J. H. Driscoll, Thomas W. Gould, J. R. Noble.

Judging from the evidence of contentment among officers of these Rockefeller ships with the close of the third season, it would seem that no matter what may be said otherwise of the head of the Standard Oil Co. and his millions, there exists in the management of his vessels the right kind of feeling between employer and employed. A system of premiums for the men, gauged on success covering essential points in the operation of the vessels, seems to have worked to decided advantage, and is highly spoken of by the captains. This year, it is understood, all of them have shared in these premiums and are correspondingly happy. One special object of the premiums has been to build up a strong organization of captains and to encourage every effort that will tend to prevent accidents to the vessels. The freedom of the fleet from disaster, whether due to this system or not, has been a matter of general comment. "It is certainly remarkable," says a vessel owner referring to the Bessemer ships, "that a fleet of twenty-one big steel vessels, coming onto the lakes in advance of conditions of docks and channels suited to their dimensions and requirements, should slip through another season with practically no loss on account of accidents. It is well known, of course, that they have been so nearly free from disaster of any kind that their losses, in proportion to the value of the vessels, are not worth mentioning."

According to report, no written contract has ever been made for the construction of a steamer for the White Star line. Ships of this line have all been built by Harland & Wolff of Belfast, Ireland, and it is claimed that the original old envelope on which the penciled memorandum for the first ship was made is still in existence.

Harry A. Magoun, formerly draughtsman at the Bath Iron Works, Bath, Me., has accepted the position of chief draughtsman of the ship building department of the Maryland Steel Co. at Sparrows Point, Md.



## MORGAN STEAM YACHT CORSAIR.

Much attention has been attracted to the new steam yacht Corsair—the third of that name—building for J. Pierpont Morgan, which was launched a few days ago at the Newburgh (N. Y.) yards of T. S. Marvel & Co., who were awarded the sub-contract for hull construction by the W. & A. Fletcher Co. of Hoboken, N. J., who have the contract for the vessel and are furnishing the engines and boilers. The first yacht Corsair, afterwards the Kanapaha, was built by the Cramps and was lost during the recent war. The second was built by the Neafie & Levy Co. of Philadelphia, and was in the auxiliary naval fleet under the name Gloucester.

The new Corsair is 302 feet over all, 252 feet water line, 30 feet beam, 20½ feet depth, and will have a draught of 14½ feet. The hull shows symmetrical lines, and above the water line the steel plates are flush, and present a smooth and unbroken surface. The hull is fitted with bilge keels, 18 inches wide amidships, that run a trifle more than one-third of her entire length. Her entrance at the designed water line is carried out in lines that are slightly convex and extend aft almost to the beginning of the bilge keels. Floors at the midship section rise at an angle of about 30 degrees from the keel, and but for the bilge keels the vessel would roll badly in a seaway. The after lines of the yacht are carried out in sweeping curves. The design aft follows closely the contour of the second Corsair, with the exception of a slight concave formation in the profile of the counter. The idea that has been found successful in the Sovereign has been followed by leaving the lower end of the rudder post without a stay or brace of any sort, so that the twin screws can have plenty of room to turn over in solid water. To this end the channels in which the shaft revolves have been spread fully 5 feet on each side of the keel line.

The vessel will be equipped with two triple expansion engines of large power, driving twin screws, and steam will be furnished by two double-end Scotch boilers. There will be a complete electric plant in duplicate for lighting and other purposes and the vessel will carry three launches, one life boat, one gig and one cutter on davits. Her deck houses are of galvanized iron and will be covered inside and out with mahogany trimmings, with the waterways and rails of teak. Cabin plans provide for ten state rooms, a library, six bath rooms and a dining saloon on the lower deck. On the main deck arrangements have been made for a deck saloon, galley, chart room and deck state room, with officers' and crew's quarters forward.

## BAD CONDITION OF ERIE HARBOR.

Congressmen from northern Pennsylvania and citizens of Erie are making strenuous efforts to have congress take some action looking to the improvement of the harbor at that place, which, according to the representations made before the rivers and harbors committee in Washington, is going to ruin faster than any other large harbor in the country. It is claimed that during the past two years over thirty vessels have grounded there. An appropriation of \$397,000 is sought for the harbor. Maj. T. W. Symons, United States engineer in charge of the district that includes Erie, has submitted a complete map and survey of all the channels, as well as the breakwaters and other works connected with the harbor. These charts show that at the west end of the harbor the sand is washed away so that there is a space of only about 50 feet between the lake and the water on the inside. The breakwater, built a number of years ago on the northwest side, and the one on the east side of the peninsula, are in ruins, and are no longer of any service in preventing the sand deposits from obstructing the navigation of the channel and harbor. Maj. Symons claims that the jetty, built by the light-house board for the purpose of protecting the ground on which the flash light stands, forms incidentally the best possible protection for the harbor, so far as it goes, and he believes that four jetties of this kind would widen the peninsula at the place where it is weakest, on account of the action of the water, and that the harbor would be splendidly protected against deposits.

## LIEUT. COM. HARRIS VINDICATED.

The many friends made by Lieutenant Commander Ira Harris, U. S. N., of the repair ship Vulcan, during his connection with machinery manufacturing concerns in Cleveland and Chicago, will be pleased to note the character of the findings of the court of inquiry on the loss of the Spanish cruiser Maria Teresa. Lieutenant Commander Harris was in charge of the government employes, enlisted men and Cubans on board the Teresa at the request of the representative of the Merritt & Chapman Derrick & Wrecking Co., and the court found that his assumption of command, after the decision to abandon the ship had been communicated, was necessary and proper under the circumstances, and that his conduct under the trying circumstances is to be commended. The court also decided that Lieut. George P. Blow acted wisely in casting off the wreck after the transfer of her crew had been accomplished. The report states, however, that the failure of the pumps to clear the ship was due in a measure to the neglect of the people in charge to properly clean out the bilges before starting.

## HIGHER PRICES FOR SPARS AND DECKING.

Reports from Tacoma, Wash., are to the effect that a general advance of \$1 per thousand has been made in the price of fir lumber in Puget Sound markets, the advance being due largely to the increased demands of ship builders. The demands of foreign ship building concerns have also been a factor. Orders recently placed with Puget Sound firms included one for 100 ship spars, each 100 feet long, to be shipped to Boston, and another for 620 spars, most of them 105 in length, for shipment to China. The extent to which the German government is purchasing fir for the decking of war vessels is illustrated by the fact the ship Artemas, which recently sailed from Port Blakeley for Hamburg, had a full cargo of decking. Several of the American firms having contracts for naval vessels have also recently placed orders of considerable size for fir. No further advance in price is anticipated, however, at least for the present.

The Spanish government will sell at public auction the floating dry dock stationed at Havana and which cost \$650,000. It is understood that private concerns in this and other countries will bid.

## STATISTICS OF DETROIT RIVER TRAFFIC.

Efforts continue to be made for a solution of the problem of obtaining reliable statistics of the commerce passing through the Detroit river. The Detroit chamber of commerce recently sought this information, and Secretary Ferry of that institution wrote to Secretary Keep of the Lake Carriers' Association relative to the matter. In his reply Secretary Keep again calls attention to the fact that there are at present no statistics on the subject other than estimates prepared from the statistics of ports above and below the river, which are of themselves incomplete. Mr. Keep says:

"Hundreds of vessels each season clear from Buffalo to Chicago and take on and discharge cargoes at intermediate ports without reporting at the customs houses. The customs house figures for soft coal shipped from Ohio ports therefore often represent not more than half of the actual shipments, and the error amounts to many hundred thousand tons. The same is true of vessels clearing from Chicago to Buffalo and taking on cargoes at Milwaukee, etc. There is no possibility of congress requiring vessels to report at the customs houses at intermediate ports. Dispatch is the most important thing in the lake business. Vessels arrive at intermediate ports and take on or discharge cargoes in the night time, when the customs house is not open."

Mr. Keep says the only plan the Lake Carriers' Association was ever able to devise was that vessels other than package freight carriers should be supplied with blanks by the government to report the cargoes laden and unladen at intermediate ports, and that it should be the duty of the master of the vessel to fill out a blank and leave it with the person in charge of the dock, whose duty it should be to mail it in a government envelope to the nearest customs office. In the case of package freight carriers they would be required to make annual reports to the bureau of statistics at Washington. This plan has been considered by the government, but no action taken.

"I know of no way of getting at the vessel tonnage moving through the Detroit river," says Mr. Keep, "unless the government stations an agent at some point at or near the river—perhaps the St. Clair Flats canal would be as good a place as any—whose business it would be to take the name and record the tonnage of every vessel passing."

## SPEED RECORDS OF UNITED STATES TORPEDO BOATS.

Recent performances of the torpedo boats Farragut, built by the Union Iron Works, San Francisco, and the Davis, built by Wolff & Zwicker, Portland, Ore., in exceeding on their trial runs the stipulated contract speed, have directed attention to the showing made by the other torpedo boats of the United States navy. The records of the torpedo boats thus far accepted are as follows:

## SPEED RECORDS OF UNITED STATES TORPEDO BOAT FLEET.

NAMES.	Tons.	Speed in Knots.		Contract Cost.
		Contract.	Trial.	
Ericsson .....	120	24	23	\$113,500
Cushing .....	105	22	22.5	82,750
Davis .....	132	22.5	23.5	81,546
Du Pont .....	165	27.5	28.58	144,000
Farragut .....	240	30	30.15	227,500
Foote .....	142	24.53	24.53	97,500
Gwin .....	45	20	20.88	39,000
McKee .....	73	20	19.8	45,000
Morris .....	98	22.5	24	85,000
Porter .....	165	27.5	28.68	144,000
Rodgers .....	142	24.5	24.9	97,500
Talbot .....	46	20	21.15	39,000
Winslow .....	137	24.5	24.82	97,500

Figures regarding Ericsson, Davis and Farragut are not official, but are close enough for all practical purposes.

The record of the Farragut in attaining the contract speed with only one mis-trial is rather remarkable, considering the difficulties experienced with some of the other boats. The Cushing and Du Pont each had three trials and the Porter developed defects after preliminary acceptance. The Ericsson had several trials, and accidents resulting in the scalding of several men occurred during the trials of the Foote and Rodgers. The McKee was accepted during the recent war without having come up to contract speed.

## NEW RECORD IN BRITISH SHIP BUILDING.

There is every indication that the present year will prove a record breaking one in the annals of British ship building. During the month of November Scotch ship builders launched nineteen vessels, of 33,813 tons gross, against forty-two vessels, aggregating about 64,335 tons, in October, this year, and thirty-five vessels of 38,055 tons in November last year. For the year so far 419,148 tons have been launched, comparing with 298,207 tons for the corresponding period of last year, 366,221 tons in 1896, 349,635 tons in 1895, and 324,953 tons in 1894.

During November English builders put into the water twenty-five steamers and one battleship, aggregating about 72,604 tons, against thirty vessels of about 83,603 tons in October, and fourteen vessels of 34,681 tons in November last year. On the Wear eight vessels of 35,539 tons gross were launched, making the total for the year so far seventy-four vessels of 238,281 tons, which constitutes a record so far as Sunderland is concerned. For the eleven months, English builders have launched 311 vessels of about 780,315 tons, against about 530,030 tons in the corresponding period of last year. One steamer of 12,300 tons was launched at Belfast. The launches in the united kingdom for the year so far have been 653 vessels of about 1,293,563 tons gross, against 601 vessels of about 911,569 tons gross for the first eleven months of 1897, and is a record.

According to an official naval program, just issued, there will be commenced, carried forward or completed in France during 1899 a total of 108 vessels, including seven battleships, thirteen armored cruisers, and eight protected cruisers. Of the vessels listed, seventeen will be completed by the close of 1898. Two of the cruisers provided for are of a new class, 4,000 tons and 15,000 horse power, with water tube boilers and a speed of 23 knots.



## PNEUMATIC POWER ON WAR SHIPS.

Mr. Chandler of the senate committee on naval affairs is evidently in favor of giving compressed air a fair trial in the work of operating the numerous auxiliary machines that are required on vessels of war. He has introduced in the senate a resolution that provides for an investigation of pneumatic systems. It is stated in the preamble that the proposed investigation is prompted by the fact that "the pneumatic system on the monitor *Terror* has given great satisfaction and has proven its adaptability and efficiency under severe tests." Capt. P. F. Harrington, who for a long time commanded the *Terror*, has strongly commended the system and has recommended that such machinery of the new battleships as it is proposed to operate by electricity shall be tried in competition on two battleships, in order that the advantages of each may be accurately determined. Compressed air as used on the *Terror* is, it is claimed, the only form of power that has been used in any navy as a complete system for all the operations of checking recoil of guns and returning same to battery, their elevation and depression, the cleaning and cooling of the guns, the manipulation of the breech mechanism, working of the turrets, hoisting and ramming the ammunition, steering the ship, working anchors, hoisting, ventilating the vessel, refrigerating, etc. The system was invented by a Washingtonian several years ago, and a company was formed, known as the Pneumatic Co. They have heretofore been hampered, they claim, by an inability to induce the navy department officials to give their apparatus a fair test on a battleship. Most of the naval men are avowedly in favor of hydraulics, steam or electricity for auxiliaries.

## PROBLEMS FOR THE LUMBER CARRIERS.

In all probability a meeting of the owners of lumber-carrying vessels of the lakes will be called some time during the winter and some pretty knotty problems discussed, although the matter of forming an association to control freights is, of course, doubtful in view of past experience. One of the points upon which the lumber carriers are determined to secure redress is in what they term the abuse of the transfer privilege. Under existing conditions boats are frequently required to go to six or eight different docks to receive their full cargo, and an effort will be made to establish a rule requiring extra payment for more than two transfers. The owners who talked some time ago of having the cargos of lumber vessels loaded and unloaded by the crew, have about abandoned that idea, as the lumber dealers have pointed out to them that an attempt to adopt any such policy would result in a struggle with the lumber shovers' union that would certainly be of long duration. The question of rates will, of course, come up at any meeting that may be held during the winter. An interesting influence in the consideration of this question is the evident disposition on the part of many of the largest lumber firms to purchase or charter their own vessels. Several have already announced that they will take such action next year, owing to the difficulty they have experienced of late in getting sufficient boats. This will prove a still more serious problem next year, on account of the removal to the Atlantic coast of considerable tonnage heretofore engaged in the lumber carrying trade, with the probability that there will be a still further loss of this class of vessels on account of more coast charters next season.

## NEW DREXEL YACHT.

Specifications have been completed for A. J. Drexel's new steam yacht, which was designed by Watson & Co. of Glasgow, and the contract for which has been awarded to Scott & Co. of Greenock, Scotland, as mentioned in the last issue of the Review. Mr. Drexel, after securing estimates on the revised specifications, decided upon a boat similar in design to the yachts *Mayflower* and *Nahma*, built on the Clyde for Messrs. Ogden and Robert Goelet. The new yacht will register 1,810 tons, as against the 1,806 tons of the vessels mentioned, and her fittings will be planned on even more sumptuous lines. The Drexel yacht will be 268 feet over all, 36 feet beam and 20 feet depth. In designing her Watson & Co. have followed, in a modified form, the general style of the *Tuscarora*, and the new vessel will have the plating of the top sides carried up in a similar fashion to form the outer casing of the deck houses. This plan has never yet been followed in so large a craft and the result will be watched with interest.

The vessel, which is designed for a speed of 17 knots, will be engined by her boilers, and her four-cylinder engine will be capable of developing 5,000 horse power. The yacht will have extra bunker space to enable her to make long cruises without recoaling.

The latest life saving scheme for passenger vessels consists of two great rafts, respectively 82 and 100 feet in length, designed to be carried as shade decks and used in the event of disasters such as that which befell *La Bourgogne*. The two rafts, it is claimed, would accommodate 2,000 people, and the French government is being urged to try them on the new French liners now building.

Twelve ship building firms have made tenders to the British admiralty for four battleships which are to be built in private yards. The vessels are to be an improvement upon the recently launched *Formidable*. They are to be of 14,000 tons, 18,000 horse power, and to develop a speed of 19 knots. They will be 405 feet long and 73 feet wide.

The recent launching of the steamer *Pathfinder* at Lewis Nixon's Crescent Ship Yard, Elizabethport, N. J., was the occasion of the adoption of a special flag for the coast and geodetic survey. The flag has a blue field carrying a white circle in the center with a red triangle in the circle.

The battleship *Alabama*, building at Cramps' yard, Philadelphia, is now 74 per cent completed. The majority of the superstructure is in place, and it is stated that work can be pushed much more rapidly from this time forward.

Marine Engineers Beneficial Association No. 2 of Cleveland held its first meeting Dec. 15. The nomination of officers for the ensuing year will be made at the meeting this (Thursday) evening.

## PECULIAR TYPE OF SHALLOW DRAFT STEAMER.

The old adage that necessity is the mother of invention has just been illustrated in Sydney, where the long-vexed problem of remuneratively navigating the shallow inland streams of New Zealand has been solved by the construction of a peculiarly-shaped vessel, the first of its kind seen in Australasia, having a speed of 11 knots, and drawing only 6 feet 6 inches when fully loaded. Something of this description has become urgently required, railway construction being practically impossible, by reason of heavy engineering difficulties, in the districts to be benefited. The designer of the new vessel has gone to Egypt for his main idea, the principal feature being an adoption of those characteristics of the gun and other boats on the Nile, and also the shallow waters in India. In the vessel, which has been successfully launched in the New South Wales metropolis, the stern takes the shape of a long, gradually rising tunnel, highest immediately over the propeller, thence gently sloping towards the load water mark at the extreme after-end. This tunnel, says the *London Syren*, is in the shape of a half cylinder, the edges being always under water, the interior top of the arc being a foot above water when the vessel is fully loaded. The propeller runs through the center of this semi-cylinder, and when the boat is stationary the top of the screw is some little way out of the water. As soon as the engines are started the air in the semi-cylinder is expelled and replaced by water, in which the propeller works as efficiently as in vessels of heavier draught. The loss of efficiency in light craft is mainly occasioned by the propeller taking down air, which is prevented in the tunnel-like arrangement of the new vessel. The *Aotea*, as the vessel is named, has a length of 126 feet 6 inches, with 24 feet 7 inches beam, and 13 feet 3 inches depth of hold. She is provided with all the requirements of a first-class intercolonial steamer, with saloon, ladies' cabin, and table accommodation for fifty passengers. The deck, which is unbroken, forms a broad promenade, giving a walk of 100 feet clear of everything. In addition to coal, water, machinery and other dead weights, over 50 tons of cargo can be shipped. The engines are of 250 horse power, and were shipped from London. Should the *Aotea* be found to fulfill the expectations formed she will be the first of a fleet projected by the Northern Union Steamboat Co. of New Zealand, and probably lead to the introduction of similar vessels on the shallow waters of the other countries.

## BELGIAN MERCHANT MARINE.

A rather novel plan has been devised for the encouragement of the merchant marine of Belgium. That the merchant marine of that country is sorely in need of some stimulating influence may be realized when it is stated that the latest attainable figures show that her steam tonnage is represented by fifty-six steamers, aggregating 72,600 tons, and that only seventeen of these are really Belgian vessels. The proposition for revival of shipping now presented contemplates the formation of a fleet of steamers to be operated under the Belgian flag, and for the ownership of which shares are to be issued at from \$5 to \$10. By this method it is hoped to get the small earnings of the people into channels that may result in the development of the ship building and ship operation interests of the country. The king has taken up the subject and ordered special state privileges to companies formed to operate under the Belgian flag. The present project is attributable to the success which attended the granting of assistance by the government to foreign steamship companies, in order to promote the commerce of Antwerp.

## STAFF OF THE TRIGG CO.

The new ship yard of the W. R. Trigg Co. at Richmond, Va., is now in full running order, and work is being pushed on the torpedo boats and destroyers for which the company has a contract with the government. Practically all the department heads have now been appointed, and among them are W. H. Woody, Jr., master shipfitter; Alexander Cruickshanks, master mechanic; F. E. Pratt, in charge of the hull department; Thomas Jardine, chief engine draughtsman; R. M. Wood, mold loft draughtsman. The naval officers detailed for the inspection of the work in progress at the yard are George H. Rock, superintending constructor; J. E. McDonald, assistant superintending constructor, and W. Strother Smith, superintending naval engineer.

## NEW VESSELS LISTED.

Merchant vessels last week registered by the bureau of navigation, treasury department, include the following of over 100 tons: Steamers *Admiral Schley*, 2,104 gross or 1,335 net tons, built at Philadelphia; J. B. Richardson, 191 gross, same net, tons, built at Jeffersonville, Ind.; *Skagit Queen*, 318 gross or 190 net tons, built at West Seattle, Wash. Schooners—*Boyd*, 473 gross or 396 net tons, built at Bath, Me.; John C. Haynes, 1,346 gross or 1,197 net tons, built at Thomaston, Me.; Parks, 474 gross or 397 net tons, built at Bath, Me. Barges—*Cuba*, 149 gross, same net, tons, built at Brooklyn, N. Y.; Maryland, 302 gross, same net, tons, built at Elkton, Md.; Virginia, 302 gross, same net, tons, built at Elkton, Md.

Gordon W. Hall of Lockport, N. Y., who has been called the "father of steam canal boats," asserted in a recent address that with the enlargement of the Erie canal locks to 260 feet length by 26 feet breadth, a sectional steam canal boat 125 feet long by 25 feet beam, with 8 feet draught, would be able to carry 25,000 bushels of grain to the seaboard at a rate of one cent per bushel and make a profit.

It is now stated that the steamer *Wisconsin*, which has been undergoing repairs at Ferrysburg, Mich., for some weeks past, will not resume her place on the Grand Haven route until after the first of the year. Her steel work is to be extended to the promenade deck, extensive alterations are to be made in her cabin, and she is to receive two new boilers. The improvements will aggregate \$25,000 in cost.

Secretary of the Navy Long has secured some live oak timber, which has been stored at the Boston navy yard for nearly half a century, for the foundation for the ways upon which the battleship *Maine* will rest at Cramps' yard, Philadelphia. The timber is so tough as to turn the edges of the steel bits used in planing the outer surface.



## SUBSIDIES FOR SHIPS.

SHIPPING INTERESTS AND THE ADMINISTRATION AT WASHINGTON HAVE FINALLY AGREED UPON A BILL FOR THE REVIVAL OF THE AMERICAN MERCANTILE MARINE—IT WILL GO HAND IN HAND WITH THE NICARAGUA CANAL ENTERPRISE—INTRODUCED IN THE SENATE BY MR. HANNA AND IN THE HOUSE BY MR. PAYNE—FULL TEXT OF THE MEASURE.

A measure to revive the American mercantile marine, with promise of full support from administration forces at Washington and the leading representatives of shipping interests throughout the country, has finally been presented to congress. Some two or three months ago Senator M. A. Hanna of Ohio intimated in an interview published in the *Marine Review* that this measure, which has been in course of preparation for nearly two years past, would be introduced early in the present session, and that it would go hand-in-hand with the Nicaragua canal bill. In other words, the bill for ship subsidies was to contain such concessions in the matter of giving American register to foreign ships as would bring support to it from Democrats in congress, and especially those of the south who are particularly anxious to have a Nicaragua canal. It must be plain to everybody who has watched proceedings in Washington during the past few weeks that the Nicaragua canal bill and this new shipping measure are to be the important measure of the present session. Stated in a few words the arguments of the forces now in power at the capital are about as follows: It is undeniable that it will take us as long to build up a merchant marine of our own as to build the Nicaragua canal. We shall not enjoy our full measure of advantage through the use of that canal without a large American merchant marine. So while we are building the canal, let us also be building up our merchant marine.

### BRIEF SUMMARY OF THE BILL.

The canal bill is being pushed forward as the regular order of business in the senate and now comes the shipping bill. It was introduced on Monday last in the senate by Mr. Hanna and in the house by Hon. Sereno E. Payne of New York, chairman of the committee on merchant marine and fisheries. It was undoubtedly written by former United States Senator Geo. F. Edmunds of Vermont, who has been working for a long time past with members of the senate and house and with representatives of steamship lines and commercial bodies in what was known as the Philadelphia committee. It is a most carefully prepared bill and bears evidence in all its parts of the full knowledge of shipping affairs possessed by those who are engaged in framing it. Briefly summarized this measure (it will be known as the Hanna-Payne bill) proposes to admit to American registry such foreign-built ships as were owned by American citizens on Jan. 1, 1899, conditioned on their owners executing a bond to contract to build in American shipyards, and within five years, tonnage equal to 50 per cent. of that so admitted. The bill also directs the secretary of the treasury to enter into a contract for twenty years with the owners of all vessels registered in the United States, to pay them a bounty conditioned on distance sailed, provided in the case of owners of existing American vessels under register that their owners execute a bond to contract to build in American ship yards, within five years, tonnage equal to 25 per cent. of that for which the bounty is sought. Foreign ships thus admitted to American registry are not permitted to engage in the coastwise trade. In the case of steamships additional compensation, based upon the size and speed, is also to be paid to registered vessels of the United States actually engaged in foreign trade, with the proviso that these latter ships shall be hereafter built so as to conform to the requirements of the government as to auxiliary cruisers, transports, etc., and that they shall carry the mails free of charge. The bounty is not to be paid until the new tonnage provided for has been built.

It is estimated that Americans own a controlling interest in foreign shipping aggregating about 250,000 tons, the admission of which to American registry is contingent upon the construction in the United States, and within five years, of 125,000 tons of new ships. According to the last annual report of the commissioner of navigation, existing American shipping under register, and eligible to the bounty when the conditions imposed are fulfilled, amounts to 737,000 tons. If all of that shipping should become entitled to receive the bounty, its owners would have had built in the United States 186,000 tons of new ships within five years. Including the foreign tonnage now owned by American citizens, and the new tonnage that it would be necessary to build to secure the bounty, there would be an addition to the shipping of the United States in the foreign trade of a total of 661,000 tons in five years. That is to say, if all of the tonnage eligible should become entitled to the bounty, the addition to the American merchant marine in the foreign trade during the next five years would amount to 89.6 per cent. of existing American tonnage under registry. This would place under the American flag, at the end of five years, 1,398,000 tons of shipping, or, in five years, would give us a tonnage as great as we had twenty years ago—in 1879. The proposition to admit 250,000 tons of foreign shipping, conditioned upon 50 per cent. of that amount being built in American yards, is intended as a sacrifice on the part of the so-called ship protectionists and as a concession to those who have so long demanded the admission of foreign-built shipping.

### CLAIMS OF SENATOR HANNA AND REPRESENTATIVE PAYNE.

Senator Hanna is quoted as saying, in connection with a discussion of the bill, that it embodies the only practicable method at this time for the restoration of the American flag on the high seas. He found that the plan to give a bounty on exports in American vessels is not feasible, on account of treaties which it would take years to change. The plan of the bill is a combination, he says, of the best features in the policies of Great Britain, Germany, France and Japan, our

principal competitors. "We could not hope to compete with other nations under the moderate rates of compensation given in this bill," Mr. Hanna says, "if it were not for three facts: First, our Pacific ports are nearer to East Asia than are the ports of Europe; second, the Suez canal tolls somewhat handicap that route, as compared with our direct route across the Pacific, and third, this bill gives a low rate of compensation to slow cargo steamships, which may be operated in connection with the faster mail steamships, and thus more nearly equalize conditions. The additional expenditure involved by this bill will be from \$1,500,000 to \$1,800,000 for the first year, and in time it will doubtless equal an annual average of \$5,000,000 or \$6,000,000. We have paid almost as much as that for a single battleship, fully armed and manned. France pays \$8,000,000 a year to promote its merchant shipping, and even Japan has set out to pay \$5,000,000 annually. With its enormous resources, the United States can well afford every dollar which can be expended as proposed. It must be remembered that for every dollar we pay out under the bill we shall get back \$10 in the way of freight money, which now goes to foreign ship owners. During 1898 we spent \$175,000,000 in freights for our sea-borne commerce, over four-fifths of which went to foreign ship owners."

Representative Payne says of the bill: "It is the result of over a year's investigations by gentlemen familiar with the subject and with our treaties, with whom I have been in consultation for a long time. The rates of the compensation have been adjusted after an examination of the rates paid by foreign nations, and they suffice to equalize differences in cost of operation and construction under the American and foreign flags, and no more."

### FULL TEXT OF THE HANNA-PAYNE BILL.

Stripped of a short, unimportant introduction to Hanna-Payne measure, entitled "a bill to promote the commerce and increase the foreign trade of the United States and to provide auxiliary cruisers, transports and seamen for government use when necessary," is in full as follows:

Be it enacted, etc., that from and after the first day of July, A. D., 1899, there shall be paid, subject to the provisions hereinafter contained, out of any money in the treasury not otherwise appropriated, to the owner of any vessel duly registered by a citizen or citizens of the United States, and being at the time of entry engaged in the foreign trade of the United States, which shall be entered in the United States from a foreign port, or from any port belonging to the United States, the trade between which and the Atlantic, Gulf and Pacific coast ports of the United States, shall happen not to be confined to vessels of the United States, compensation as hereinafter provided; that is to say:

The secretary of the treasury is hereby authorized and directed to contract with the owner of any vessel of the United States hereinbefore described, and registered for foreign trade, for the payment to said owner for a period of twenty years, and subject to the provisions of this act, out of any money in the treasury not otherwise appropriated, the sums following, namely:

(a) On each entry of a sail or steam vessel, not exceeding sixteen entries in any twelve consecutive months, 1½ cents per gross ton for each 100 nautical miles for the first 1,500 nautical miles sailed both outward and homeward bound, and 1 cent per gross ton for each 100 nautical miles over 1,500 nautical miles sailed both outward and homeward bound.

(b) Steam vessels which may be suitable for carrying the mails of the United States or as auxiliaries to the forces of the United States in time of war or other need, if of the following tonnages and capable of maintaining the following rates of speed under the conditions hereinafter provided, shall, in addition to the compensation provided in paragraph (a) of this section, receive compensation per gross ton, for each 100 nautical miles sailed both outward and homeward bound, at the following rates, namely:

Vessels over 1,500 gross tons—Fourteen knots and less than 15 knots, 1 cent per gross ton; 15 knots and less than 16 knots, 1.1 cents per gross ton; 16 knots or over, 1.2 cents per gross ton.

Vessels over 3,000 gross tons—Seventeen knots and less than 18 knots, 1.4 cents per gross ton; 18 knots and less than 19 knots, 1.6 cents per gross ton; 19 knots or over, 1.8 cents per gross ton.

Vessels Over Eight Thousand Gross Tons—Twenty knots and less than 21 knots, 2 cents per gross ton; 21 knots or over, 2.3 cents per gross ton.

Vessels Over Ten Thousand Gross Tons—Twenty-two knots and less than 23 knots, 2.7 cents per gross ton; 23 knots or over, 3.2 cents per gross ton.

No vessel shall be entitled to compensation under more than one of the tonnage and speed classifications in this clause specified.

(c) The mileage upon which compensation shall be paid under the hereinbefore stated clauses (a) and (b) shall be determined by the direct customary route from the last port of departure at which cargo, passengers or mails shall have been taken in the United States for and carried to a foreign port, or a port belonging to the United States described in section 1 of this act, at which cargo, passengers or mails shall have been discharged or taken, and from such last mentioned port by the direct customary route to the first port of arrival in the United States at which cargo, passengers or mails shall have been discharged. If during the voyage the vessel shall discharge or take cargo, passengers or mail at two or more foreign ports, or ports belonging to the United States described in section 1 of this act, the distance by the direct customary route between such ports shall also be included in the mileage upon which compensation shall be paid under the aforesaid clauses (a) and (b).

Sec. 2. No vessel shall be entitled to compensation under section 1 of this act unless at least one-fourth of her navigating crew shall be citizens of the United States or such persons as shall be within the provisions of sections 2,100 and 74 of the revised statutes of the United States. If it shall happen at any time that the foregoing stated proportion of an American crew cannot be reasonably obtained, the shipping commissioner or the officer discharging his duties at any port of the United States, or the United States consul or the officer discharging his duties at the foreign port whence any such vessel is to clear, shall allow the shipment of persons not Americans to make up the necessary number of the crew.

Sec. 3. The test for the speed of the vessels provided for in this act



shall be made under the direction and supervision of a board of naval officers, which the secretary of the navy shall appoint, upon the application of the owner or owners of any such vessel, and the test must include not less than four hours continuous steaming at sea in ordinary weather in water of sufficient depth to make the test a fair and just one.

Sec. 4. A documented vessel of the United States, engaged in the deep-sea fisheries for three months during twelve consecutive months, shall receive a bounty annually from any money in the treasury not otherwise appropriated of \$2 per gross ton, provided, that at least one-third of the crew shall be American citizens.

Sec. 5. An American citizen serving as a member of a necessary and proper crew of an American vessel, licensed for and engaged in deep-sea fisheries for three months or more during twelve consecutive months, shall receive a bounty from any money in the treasury not otherwise appropriated of \$1 per month during the time necessarily employed in the voyages of such vessel.

Sec. 6. No compensation shall be allowed in respect of any of the following named vessels: (a) A vessel not engaged in trade. (b) A vessel trading wholly upon interior water not tidal, between a port in the United States and a foreign port. (c) A vessel of the United States employed in the coasting trade or in the fisheries, except as provided in sections 1, 4, 7 and 8 of this act. (d) A vessel owned by a citizen of the United States, which shall not be entitled under the provisions of section 4, 131, of the revised statutes, or any amendments or supplements thereto, or under this act, to the benefits and privileges of a vessel of the United States. (e) A vessel on a voyage extending only to a foreign port less than 150 nautical miles from her last port of departure in the United States, at which cargo, passengers or mails shall have been taken, or from a foreign port less than 150 nautical miles from her first port of arrival in the United States, at which cargo, passengers or mails shall have been discharged.

Sec. 7. The secretary of the treasury is hereby authorized and directed on the application of the owners of such vessels to grant registers as vessels of the United States, under the conditions hereinafter stated, to the following described vessels:

(a) To such foreign-built steamships as were on Dec. 1 A. D. 1898, engaged in an established freight or passenger business, or both, from a port of the United States and as were on that date classed, or fit to be classed, in the Record of American and Foreign Shipping, or Lloyd's Register of British and Foreign Shipping, or the Bureau Veritas, and as were also on the said Dec. 1, A. D. 1898, actually owned by and then really representing the capital of a citizen or citizens of the United States (including as such citizens, corporations created under the laws of the United States or any of the States thereof), or a foreign corporation or association, of which not less than 90 per cent. of the capital stock thereof was on the said Dec. 1, A. D. 1898, actually owned by, and really representing the capital of, a citizen or citizens of the United States (including as such citizens, corporations created under the laws of the United States or any of the States thereof), upon such American owner or owners of such majority interest obtaining a full and complete transfer of, and title to, such steamships from the foreign corporation or association owning the same and proving to the satisfaction of the secretary of the treasury that all the foregoing stated requirements have been complied with;

(b) To such foreign built steamships as shall have been under contract for construction and duly authenticated copies of the contract or contracts therefore filed with the secretary of the treasury on or before the first day of February, A. D., 1899, and which shall, when built as provided for in this act, and the registry thereof requested, be classed or fit to be classed in the Record of American and Foreign Shipping, or Lloyd's Register of British and Foreign Shipping, or the Bureau Veritas, such vessels being actually contracted for by an American citizen or citizens (including as such citizens corporations created under the laws of the United States or any of the States thereof) who shall have been such since the first day of December A. D. 1898, or by a foreign corporation or association, of which not less than 90 per cent. of the shares of the capital thereof shall have been actually owned by a citizen or citizens of the United States (including as such citizens corporations created under the laws of the United States or any of the States thereof) and really representing American capital, on the said first day of December A. D. 1898, and shall have continued to be so owned until the passage of this act, and upon such American owner or owners of such majority interest obtaining a full and complete transfer of, and title to, such steamships from the foreign corporation or association owning the same and proving to the satisfaction of the secretary of the treasury that all the foregoing stated requirements have been complied with; provided, that such American owners shall, before the first registry of the foreign built vessels before mentioned in clauses (a) and (b) of this section shall be had, give a bond to the United States in the penal sum of \$50,000, with sufficient surety to be approved by the secretary of the treasury, conditioned that such owner or owners of such vessel or vessels will build, or shall have built after the passage of this act, in the United States, and shall duly make written application to the secretary of the treasury to have registered in the United States, within five years next after the time of the registry of any such foreign built vessel or vessels, a new vessel or vessels, respectively, of an aggregate gross tonnage equal to at least 50 per cent. of the aggregate gross tonnage of such foreign-built vessel or vessels so registered, which new vessel or vessels shall be capable of receiving the highest classification in the Record of American and Foreign Shipping, or Lloyd's Register of British and Foreign Shipping, or the Bureau Veritas; and when any such new vessel or vessels shall have been so built, notice thereof may be given to the secretary of the treasury, who shall, upon the production of the builders' sworn and satisfactory certificate, certify that the said vessel has been built in compliance with the conditions of the said bond; but the new vessel or vessels so built shall be subject to the same provisions and restrictions as the foreign-built vessel, in respect of the coasting and other trade as in this act provided. If the conditions of the bond in this section mentioned shall fail to be wholly performed as herein provided, the registry of any such foreign built vessel or vessels, in relation to which said bond was executed, shall be canceled, and such vessel or vessels shall cease to have any rights or privileges of vessels of the United States; but if any such contract shall have been partly performed by the building, completion and registry of any such new vessel or vessels, the

registration of such foreign built vessel or vessels shall be canceled and such vessel or vessels deprived of the right and privileges of vessels of the United States only to the extent of the proportionate failure to build, complete and register the amount of tonnage of the new vessel or vessels required by this section. The provisions of this section shall not affect the liability of the signers of the bond provided for herein, and all earned and unpaid compensation in respect of any vessel or vessels the registry of which shall be so canceled shall be forfeited to the United States. But if it shall happen that any of such new vessels shall without any fault or want of diligence on the part of the obligors in such bond fail to be built and registered as required by this section, the secretary of the treasury shall extend the time of the performance of the conditions of such bond for such period or periods as shall appear to him to be just, and in that case the right of such obligors shall be the same as if the performance of the condition of such bond had occurred within the said five years. The secretary of the treasury is hereby empowered to decide, upon principles of justice and equity, which vessel or vessels of a fleet of the same owner or owners shall be the vessel or vessels to be deprived of registry as aforesaid.

Sec. 8. No further or other inspection shall be required for such foreign built steamship or steamships than is now required for foreign steamships carrying passengers under the existing laws of the United States; and a special certificate of inspection shall be issued for each foreign-built steamship registered under this act, and before issuing the registry for any such steamship as a vessel of the United States the collector of customs of the proper collection district shall cause such steamship to be measured and described in accordance with the laws of the United States, which measurement and description shall be recited in the certificate of registry to be issued under this act, after which such vessel shall be entitled to all the rights and privileges of vessels of the United States as provided for in section 1 of this act, except that it shall not be employed in the coasting trade of the United States, including the trade between the Atlantic and Gulf ports and the Pacific coast ports thereof.

Sec. 9. The compensation earned under the provisions of this act by any foreign-built vessel or vessels registered as vessels in the United States as provided in section 7 of this act shall be retained by the secretary of the treasury until the American owner or owners of such vessel or vessels shall have fulfilled the conditions of the bond provided for in said section 7; provided, that as each new vessel built according to the conditions of said bond shall be completed and registered as a vessel of the United States the owner or owners of such new vessel shall receive compensation out of such compensation retained under this act, from the date of the registry of such foreign-built vessel or vessels on a tonnage in a proportion equal to double the amount of the gross tonnage of the new vessel or vessels aforesaid; and the compensation thereafter earned by such foreign built vessel or vessels shall be retained only in the same proportion applied to the total gross tonnage of the new vessel or vessels remaining to be built, completed and registered as provided in this act.

Sec. 10. The compensation applicable to the service of the existing vessels of the United States provided for in this act, other than as conditioned in section 7 of this act, shall be allowed and paid only on the condition precedent that the owner or owners of any such now existing vessel or vessels claiming such compensation shall have given bond to the United States in the penal sum of \$25,000 (but the secretary of the treasury may, in the case of vessels not exceeding 2,000 gross tons, receive a bond for these purposes for such smaller sum as shall to him appear just), with surety to the satisfaction of the secretary of the treasury, conditioned that such owner or owners will, within five years next, after the giving of such bond, make, in good faith, and with responsible parties, a contract, or contracts, as the case may be, for the building in the United States of another vessel or other vessels, as the case may be, of an aggregate gross tonnage at least equal to 25 per cent. of the tonnage of the vessel or vessels so now existing in respect of which such compensation shall be claimed. The provisions of this section shall not affect the rights of the owners of the vessels mentioned in section 4 of this act.

Sec. 11. All the vessels (excepting those provided for in section 4 of this act), receiving compensation under this act shall, when required so to do by the secretary of the treasury or the secretary of the navy, as the case may be, carry on each foreign voyage as a member of the ship's company one American boy under twenty-one years of age, and suitable for such employment, for each 1,000 tons gross registered tonnage, which boys shall be taught in the duties of seamanship, or engineering, or other maritime knowledge, as the case may be, respectively, and receive such pay for their services as shall be reasonable.

Sec. 12. Any and every of such vessels, so admitted to American registry, or so built as in this act provided, may be taken or employed and used by the United States as cruisers or transports at any time; and in every such case the owner or owners of any such vessel or vessels so taken or employed shall be paid the fair value thereof, if taken, at the time of the taking, and if employed, shall be paid the fair value of such use; and if there shall be a disagreement as to such fair value, the question of the valuation shall be submitted to and determined by three impartial appraisers, one to be appointed pursuant to the regulations provided for in section 13 of this act, one by the owner or owners of the vessel, and one as next stated. The appraisers so appointed shall, before they proceed to act, select a third appraiser, who shall form one of the appraisal board. The decision of a majority of said board shall be final and effective.

Sec. 13. The president of the United States shall, from time to time, cause to be made by the proper heads of departments regulations for the due execution of the provisions of this act.

Sec. 14. All vessels receiving compensation under this act shall carry mails of the United States free of charge, if required to do so, and no vessel shall be entitled to compensation under this act, the owner or owners of which receive any other compensation from the government of the United States for carrying the United States mails; but the owner or owners of any vessel or vessels of the United States now under contract to carry the mails of the United States may apply to the postmaster-general to be released from such contract, and, on such application, the postmaster-general shall thereupon cause such contract to be terminated and canceled.

Sec. 15. All acts and parts of acts inconsistent with or superseded by the provisions of this act, are hereby repealed.



# MARINE REVIEW

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Mr. Collis P. Huntington, principal stockholder in the Newport News Ship Building & Dry Dock Co., has been interviewed on the shipping question and has given out an opinion that is not at all in accord with the views entertained by other representatives of the ship building industry. Mr. Huntington may possibly be charged with having some interests that differ with ship building, but his remarks have at least the ring of confidence in all that his contention implies. He expresses the belief that an enormous increase in our ship building may be expected in the immediate future, but he does not look for advantages in either ship building or the expansion of our merchant marine through action of congress. "What has congress to do with the merchant marine?" Mr. Huntington is quoted as saying: "Only a few of the smaller nations of the world now subsidize ocean steamships. England does very little for her merchant marine." This radical sentiment, coming from a ship builder and vessel owner of recognized prominence, is so markedly at variance with the views of the majority of persons with similar interests that it can scarcely fail to attract an unusual degree of attention. Mr. Huntington's remarks with reference to simply the ship building phase of the question will probably find a wider endorsement. He says: "We build ships today as cheaply as England, excepting the cost of labor. When we can build ships in competition with foreign builders there is no reason why congress should be asked to help our ship builders. We build a great deal better ships than are built on the Clyde. There are American-built ships in service today between New York and New Orleans that are thirty-four years old. The ocean tramps built in Great Britain are not intended to last more than five or six years. We have a better class of labor in this country and we are selling ship building material to English builders today. If we had cheaper labor in this country we could build ships today cheaper than England. In a ship which costs \$500,000, not \$100,000—no, not \$25,000—is represented by materials in the crude state—the iron in the American mine, the timber in the American forest. The remainder is good American labor. We have the best labor in this country that is known in the world; but it is expensive." In his discussion of the labor problem Mr. Huntington might have looked into the future and with entire consistency predicted the approach of a time when the advantage of the low English wage will be in a measure offset by the increasing tyranny of the demands of the men, and the delay and uncertainty of work which must follow as a natural sequence.

Expressions of satisfaction have been general over the decision to extend and improve the course of instruction in naval architecture at the naval academy at Annapolis, rather than to discontinue it as has been advocated in certain quarters. Capt. F. W. Dickins, assistant chief of the bureau of navigation, who was instructed to examine the facilities offered by the Massachusetts Institute of Technology, to determine whether the school was capable of undertaking the instruction of graduates of the naval academy who might wish to enter the construction corps, admits that the technology course is very complete, but is strongly averse to the plan. He points out, first of all, that the course at the outside schools has been established with special reference to commercial work, rather than to naval architecture. He recommends the establishment of a post-graduate course in design and construction at Annapolis, and expresses the belief that the work can be conducted there much more satisfactorily than in any institution that is not controlled absolutely by the government. Capt. Dickins has also made an excellent point in calling attention to the fact that students from Annapolis, in going about the country as a class to visit navy yards, stations, ship building yards, machinery and electric plants, would be received with the courtesy always accorded to the government and afforded special facilities for examination that might be withheld from private institutions. The same objections advanced against the Massachusetts school may be raised against Cornell and other institutions, although in some respects they are admirably fitted for experimental work.

A despatch from Washington announces that, notwithstanding the recommendations of the president and the secretary of the navy for a big increase in the navy, Senator Hanna advanced the opinion at an informal meeting of the senate committee on naval affairs, a few days ago, that for the present additions to the navy should be limited to the actual requirements. The excuse is that many improvements are now being made in naval architecture, which render it expedient to wait as long as possible before entering too extensively upon ship building. There is certainly something back of this excuse. Changes in naval architecture are of no more importance now than they have been for several years past. It is true that the ship yards are filled up with work, and that ships contracted for now would not be delivered for a long time to come, but it may be said, as a guess, that if appropriations for new naval vessels are limited, it will probably be for the reason that appropriations generally are to be held down by the administration, in order to put through the two big measures—Nicaragua canal and a shipping bill.

The question is likely to be raised in some quarters as to the wisdom of the decision of the navy department to place out of commission the repair ship Vulcan. Her plant, it is stated, is to be overhauled and made ready for use at short notice, but at the same time this vessel, which precluded the necessity of any of the vessels engaged in the Santiago blockade returning home for repairs, is to be put entirely out of commission and not held in reserve like many of the other vessels of the navy. Many naval officers and men conversant with shipping affairs say that the Vulcan could profitably be kept in commission regularly, while a still greater number contend that the vessel should at least be held in reserve.

## RICHARD HARDING DAVIS AND THE WAR TRANSPORTS.

It is doubtful if there has been in shipping circles during several months past any more universally discussed subject than certain comments made by Richard Harding Davis, war correspondent and magazine writer, upon the conduct of officers of the transports which conveyed during the recent war the first military expedition to Santiago. An excellent opportunity to analyze the rather sensational charges made by Mr. Davis is afforded in his new book, "The Cuban and Porto Rican Campaigns," which has just been issued from the press of the Scribners. In describing the landing at Siboney he says in part:

"To add to the confusion which retarded the landing of supplies, the transport captains acted with an impudence and disregard of what was required of them that should, early in the day, have led to their being placed in irons. The misconduct of the transport captains was so important a matter that much more space must be devoted to it than can be allowed here. In a word, they acted entirely in what they believed to be the interests of the 'owners,' meaning, not the government, which was paying them enormous rents per day, but the men who employed them in time of peace. For the greater part of each day these men kept from three to twenty miles out at sea, where it was impossible to communicate with them, and where they burned coal at the expense of the government. Had they been given stations and ordered to anchor over them, they could have been found when the supplies they carried were wanted, and the cost of coal saved. I was on six different transports, and on none of them did I find a captain who was, in his attitude toward the government, anything but insolent, un-American and mutinous, and when there was firing of any sort on shore they showed themselves to be the most abject cowards and put to the open sea, carrying the much-needed supplies with them.

"When our warships had destroyed the Maria Teresa and 400 of her Spanish crew were clinging to the wreck, the captain of one of the transports refused to lower his boats and go to their aid. This was after the firing had entirely ceased and there was no danger. Had it not been for the Gloucester, which had just been engaged with the enemy, and her two small shore boats, the entire 400 prisoners would have been washed into the sea and drowned. The English government pays the merchant vessels it uses for transports 10 per cent. over their usual freight rates; our government paid these transports 200 to 300 per cent. over freight rates, possibly because our government, like nature, is not economical, and for the reason that many of the vessels were passenger carriers as well as freighters. But the greater number of the owners, before sending their vessels south, stripped them of everything needed on a passenger ship, even of bed-linen and towels, and sent them to sea undermanned, so they were virtually nothing but freight carriers and ocean tramps. The fact that this floating collection of stores was in shore one day, and out of sight 20 miles at sea the next, was one of the causes of the failure to supply the troops with rations. These captains knew that the soldiers at the front needed food, and that the food needed was in the hulls of the ships they commanded, but in order to save the owner a smashed davit, or a scratched hull, or for no other reason than their own will, they allowed the men at the front to starve while they beat up and down as they pleased.

"Had there been a strong man in command of the expedition he would have ordered them into place, stern and bow anchors would have kept them there, and a signal officer on shore could have communicated with them at their different stations in the harbor. But there was no captain of the port appointed, and instead of a signal officer to wigwag to them, the transports were chased over many miles of sea in small row boats. The transport captains were civilians for the time being, under the direction of the government, and were amenable to military laws. When the stevedores mutinied at Guanica, and at the port of Ponce under General Miles, they were given three minutes to resume work, with the choice of being put in irons if they did not, and were informed if they jumped overboard and tried to escape they would be shot in the water as deserters."

Mr. Davis' comments anent the transport question in his magazine articles elicited some spicy replies, but the discussion engendered is likely to be nothing compared to that induced by the above comments. The book of which this forms a part is a most interesting narrative of the whole conflict. Mr. Davis is probably the most brilliant, as well as most vivid, descriptive writer in America, and added to his power for a graphic portrayal of events is his willingness to say exactly what he thinks on all topics. The volume is handsomely illustrated from photos taken by Mr. Davis and others, and contains excellent maps of Cuba and Porto Rico.

Published by Charles Scribner's Sons, 153-155 Fifth avenue, New York City; price \$1.50.

A subject in which the greatest interest is now manifest everywhere is discussed by Mr. Fred T. Lane, author of "All the World's Fighting Ships," in his latest contribution entitled "The Torpedo in Peace and War." The volume, which is a large one and a magnificent one typographically, contains full discussions of torpedoes, torpedo boats, torpedo catchers, destroyers, submarine mines, bombs, submarine torpedo boats, aerial torpedos and torpedo gunboats. There are very interesting chapters detailing the expenses of the author in cruises on the British torpedo boat No. 65 and the torpedo catcher Grasshopper, and during the first cruise of the destroyers when on naval maneuvers of 1894. There are also discussions of questions of timely interest, such as those relative to defense against torpedo craft and the future of torpedo craft. There are upwards of a hundred handsome illustrations, many of them full page and sketched at sea. They include a full pictorial presentment of the actions of torpedo craft in the Japanese-Chinese war.

Published by W. Thacker & Co., 2 Creed Lane, Ludgate Hill, London, E. C.; price \$2.50.

The naval board of bureau chiefs has decided by a majority vote against the introduction of electrical apparatus on warships beyond their present comprehensive use in the operation of auxiliaries.

H. A. Chapin, owner of the famous Chapin iron mine, died a few days ago at Niles, Mich., aged eighty-five years. His income from the mine is said to have amounted to as high as \$300,000 a year.



## END OF THE YEAR CONTRACTS.

Bids submitted to the navy department for the 100-ton floating crane for the Brooklyn navy yard were: Merritt-Chapman Wrecking Co., \$85,000; Brown Hoisting & Conveying Machine Co. of Cleveland, \$100,000; L. Schutte & Co. of Philadelphia, \$100,000. The specifications state that the work should be steel throughout. The proposal of the Merritt-Chapman Wrecking Co. is not in compliance with this, as the crane which they propose to furnish possesses a wooden hull. It is, in fact, the pair of shears Monarch, which were built several years ago, and have been in use ever since.

Commander U. Sebree, U. S. N., inspector of the twelfth light-house district, with headquarters at San Francisco, has received the following bids: For furnishing two return tubular boilers of the Scotch type, for the light-house tender Madrona: Patrick F. Dundon, \$18,443; Union Iron Works, \$22,800; Risdon Iron & Locomotive Works, \$24,950; T. J. Moynihan, \$27,000; all local bidders.

It is stated that the American Hoist & Derrick Co., whose New York offices are at 26 Cortlandt street, will be awarded the contract for the 40-ton jib locomotive crane to be installed in the Port Royal navy yard. This company's bid was \$39,950. It was the second lowest, the lowest being \$12,500, submitted by E. M. Bailey & Co. of Charleston, S. C.

H. I. Crandall & Son, well-known firm of marine railway engineers of East Boston, Mass., have received an order from parties in Stavanger, Norway, for complete designs and working drawings for one of their improved marine railways to be built at that port.

Ship building operations at Essex, Mass., are active. A. D. Story is building a schooner of 125 tons and another of 190 tons. James & Tarr are at work on a schooner of 194 tons for Capt. Charles Young of Gloucester and will soon start work on another vessel.

The freight and passenger steamer Hamilton, building for the Old Dominion Steamship Co. at the Roach ship yard, Chester, Pa., will be launched within the next few days, and her sister ship, the Jefferson, will follow in a month or so.

The Sumner Iron Works, Everett, Wash., has contracted to build two steamers, each to carry 150 passengers and 90 tons of freight on 16 inches draught, for S. S. Bailey of Seattle, who expects to use them in the Alaskan service.

Moran Bros. of Seattle, Wash., have begun work on a tug 80 feet over all, 17½ feet beam, 9 feet depth, and 6½ feet draught. Her engines will be of 250 indicated horse power and she will be equipped with Scotch boilers.

Major Thomas H. Handbury, United States engineer at St. Louis, Mo., advertises elsewhere in this issue for proposals for the construction of three steel-hulled steam tenders. Bids will be opened Jan. 14.

Nicholas and Michael Connolly, Montreal, Canada, have secured from the Canadian department of marine and fisheries a large contract for dredging and wharf building at St. Johns, N. B.

Capt. J. B. Wallace of Rogue Bluffs, Me., has begun work on a small steamer, which is to be completed by the opening of navigation in the spring.

It is rumored that the J. & E. A. Wiman Co. of Millbridge, Me., will build a new steamer to take the place of the Raritata.

C. B. Wykoff has opened a new boat building establishment at Clinton, Conn.

## COASTING TRADE OF CUBA.

The war department has issued an order relative to the coasting trade of Cuba, which is expected to afford a solution for some rather perplexing difficulties which have presented themselves. The coasting trade of the island has heretofore been restricted to Spanish vessels. To enable residents of Cuba who have hitherto employed Spanish vessels to continue in the coasting trade, the new regulations permit such owners to continue trade on making the customary renunciation of allegiance. While the military occupation is in force American vessels may engage in the coasting trade without prejudice, however, to any different regulation which a Cuban government may hereafter establish. Inasmuch as foreign nations are not assisting the United States in the military occupation of Cuba, they have no title to engage in the coasting trade and will not be allowed to.

"It is an ill wind that blows no good," says the lake vessel owner with unusual emphasis in viewing the small fleet of grain carriers laid up at Chicago this winter. The fleet will represent a combined capacity of probably not more than 8,000,000 bushels, against 18,000,000 bushels capacity laid up there last winter. The winds and ice of the latter part of November and early part of December prevented from going to Chicago and Milwaukee a great many vessels that expected to take coal to Lake Michigan and store grain during the winter. Chicago grain men are claiming that there will not be much grain to care for this winter, but it would seem, nevertheless, that the great difference in vessel capacity available for storage should cut something of a figure in the matter of rates for storage and delivering at Buffalo next spring.

The handsome new passenger steamer Cape Charles, delivered to the New York, Philadelphia & Norfolk Railroad by the Roach ship yard last September, and fully described and illustrated in the Review at that time, burned and sank at her dock in Norfolk harbor last week. The vessel had not been in service for several weeks, as changes were being made by the Roach company to increase her speed. She was valued at \$130,000 and is fully insured. It is likely that her hull, engines and boilers are not seriously damaged.

Dredges built by the Bucyrus Co. at South Milwaukee, as well as those used on the Chicago drainage canal and in the work of the Mississippi River Commission, will be affected by a decision just handed down in a California court sustaining the validity of the Bowers' patents in hydraulic dredging machines.

## DURABILITY OF PAINT IN SHIP WORK.

In probably no use is the durability of paint put to a more severe test than in ship painting, and men identified with shipping interests have therefore read much that has been written lately about an old sign in possession of the Western Society of Engineers at Chicago. The words "Harper's Ferry," painted in black, stand out as boldly as when they were first formed by the artist's brush, while the wood around the letters, which was painted with white paint, has worn away about one-sixteenth of an inch. It is asserted by the writers that no paint manufactured nowadays is equal in durability to that which was applied on the old sign.

Mr. William Hooper of Ticonderoga, N. Y., writes to the Joseph Dixon Crucible Co. of Jersey City, N. J.: "I believe that finely ground graphite mixed with pure linseed oil, will last as long, or longer, than any other paint ever known of or used. I had a large iron casting which laid in my mill yard for over thirty years. It was painted with only one coat. The old casting was broken up and sold for old iron last month, and I noticed that the paint on the pieces of casting, even after being broken up, looked quite fresh. If the surface to be painted is perfectly dry when the finely ground graphite is applied the paint will prove the most lasting paint known, because if time eliminates all of the oil, the graphite seems to adhere to the surface painted, just the same as a piece of paper or wood will appear after it has been rubbed with a lead pencil or a piece of graphite. No other pigment known to me will remain on the surface painted after the oil has been thoroughly destroyed."

## NEW STEEL SEAGOING YACHT.

The Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated, of Morris Heights, New York, have secured the contract to build an ocean-going steam yacht, modern in all its appointments, for Edward H. Blake of Bangor, Me. The vessel, which will be named the Aria, will replace the Rex, which has been unsuited to Mr. Blake's needs because of its small size. The new vessel will be of steel, 145 feet over all, 23 feet beam and 12 feet depth, with a tonnage something above 200. She will have a flush deck, with houses of mahogany, and will be capable of attaining a speed of 16 knots. Power for propulsion will be furnished by a triple expansion single-screw engine, for which steam will be furnished from a water tube boiler. The contract calls for completion of the Aria in exactly five months from the date of signing the contract.

## A GREAT HOWDEN FLEET.

During the month of November orders were taken for twenty-one installations of Howden hot draft in steam vessels throughout the world. This adds 70,300 I. H. P. to the total horse power of ships now using Howden draft. Mr. James Howden, inventor of this draft system, writes the Dry Dock Engine Works of Detroit from Glasgow that the total number of installations throughout the world Dec. 1 was 848, with an aggregate I. H. P. of 2,383,900. This is an average of 2,823 I. H. P. per ship, indicating that the draft is being applied in nearly all cases to big, high-powered steamers.

A Washington dispatch says that Senator McMillan has made a favorable report from the commerce committee on the bill introduced by him at the first session of the present congress, providing for the establishment of a wind signal display station on South Manitou island, with telephonic communication with the mainland by cable, a project which has been urged for years by weather bureau employes on the lakes. The bill carries an appropriation of \$15,000, of which \$12,000 would be required for a cable and telegraphic line. The necessity for the station was strikingly illustrated, it is claimed, by the recent stranding of the steamer John Mitchell and consort on North Manitou island, when it was with the greatest difficulty that information regarding the accident was obtained.

For a great number of years past the Weddell house has been the favorite hotel in Cleveland with vessel men. It is close to the several buildings in the vicinity of Bank and Superior streets, in which the vessel interests and the large iron ore and pig iron interests of the city are represented. It has always been a good hotel. Under new management—Messrs. Bates & Swan—it is now undergoing many changes and bids fair to become more popular than ever. Its motto from this time on will be "the cleanest and best-kept hotel in America for the price." Rates have been reduced, but the new management promises to keep the hotel up to the high standard that made it popular in the past.

Numerous costly disasters on the great lakes this fall, and especially the stranding of the steamers Arthur Orr, Tampa, and one of the vessels of the Bradley fleet, will again be made the basis of a plea by officers of the Lake Carriers' Association for the reopening of the light-house on Isle Royale, which has been closed for twenty-five or thirty years and for the establishment of lights at Beaver Bay and one or two points along the north shore of Lake Superior. Some of the worst disasters of the autumn have occurred within sight of light-houses long since abandoned.

An immense volume of business on hand, with a steady increase of production but no surplus, are still the features of the steel and iron industry. Everything points to an output of iron and steel during the coming year unheard of in this or any other country. The blast furnaces increased their output during November at the rate of 6,500 tons per week, but in spite of this increase stocks fell off 2,100 tons.

Ship builders generally discredit the story sent out from Washington this week to the effect that the government is considering the advisability of having several of the 6,000-ton protected cruisers, recommended in the new naval program, built at the Brooklyn, Norfolk and Mare island navy yards.

Capt. Leo Bernard, Sault river pilot, has written a letter to the Review expressing his appreciation of the treatment which he has received from captains during the season just closed. He maintained a set of ranges on St. Joe's island, a light ship on Vidal shoal and a set of ranges at Birch point.



### "WORTH THEIR WEIGHT IN GOLD."

WONDERFUL OPERATIONS OF TUGS IN RELEASING THE ICE-BOUND FLEET OF BIG FREIGHT-CARRYING STEAMERS—THE PORT HURON TUG MASON.

"They were worth their weight in gold," said Mr. H. Coulby of Pickands, Mather & Co., Cleveland, in referring to the work of tugs that were engaged in releasing the big ice-bound fleet of cargo steamers on Lake St. Clair and at the mouth of the Detroit river. Mr. Coulby, who represented all the vessel interests in this work, referred particularly to the Mason, a tug built recently by the Jenks Ship Building Co. of Port Huron, and which has already established a reputation as an ice-crusher. A great deal was expected from the car ferries in the struggle that has been going on for ten days past in the great ice fields, but the tugs were not depended upon particularly, and their wonderful operations as ice crushers were therefore all the more pleasing to the vessel men. A picture of the Mason is presented herewith. She is an all-round, first-class wooden tug, built at the Jenks works and fitted out complete by that concern, even to the several auxiliary machines that are usually furnished by manufacturers making a specialty of auxiliary machinery for steam vessels. The Mason is 95 feet long, 20 feet beam and 12 feet deep. Her engines are triple expansion, with cylinders of 14, 22½ and 36 inches diameter, and a common stroke of 28 inches. The boiler is 10 by 14 feet, of fire-box type, allowed 200 pounds steam.

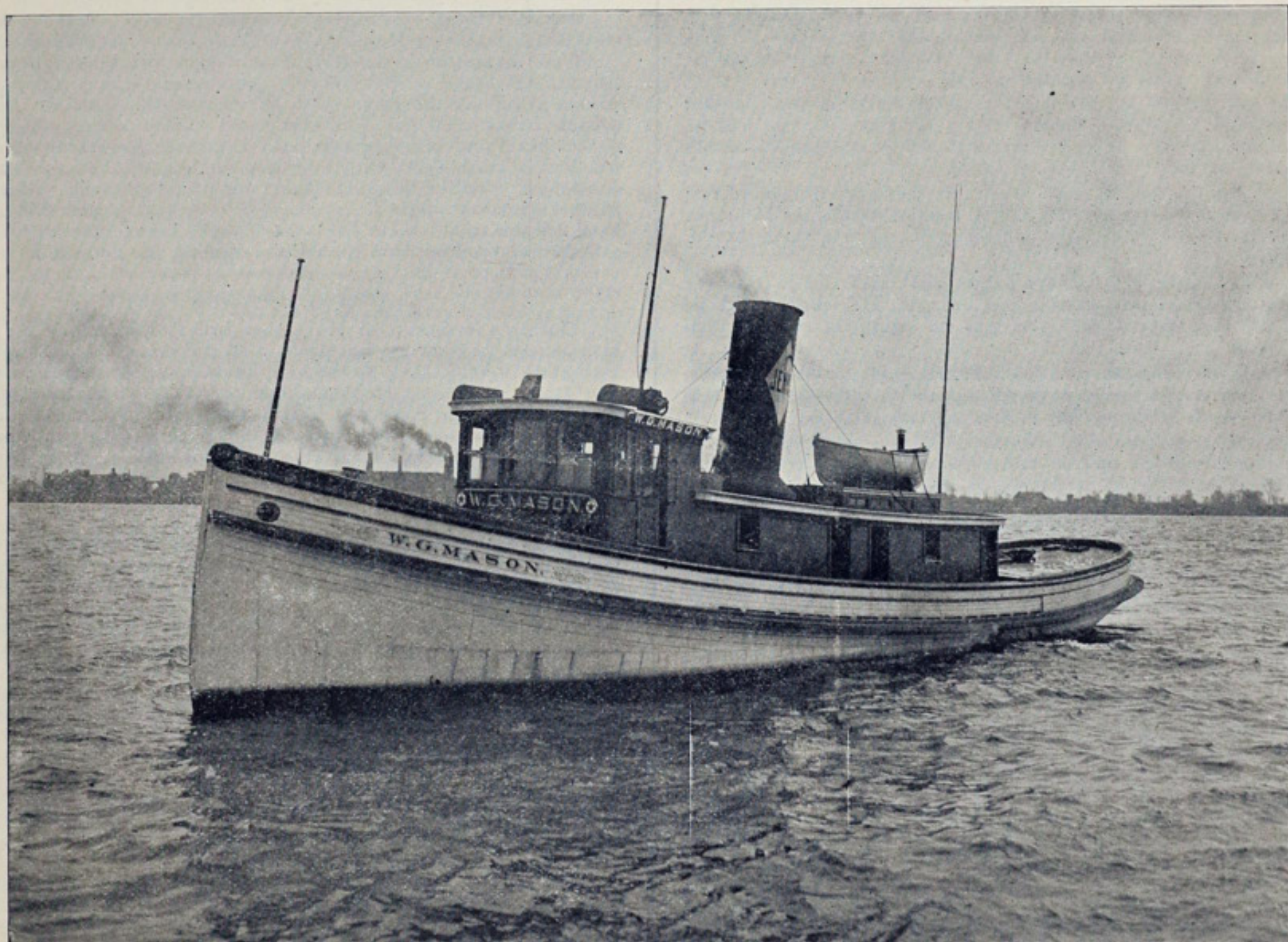
It is understood that the Jenks company is about to undertake at Port

apparatus. Then the condenser of the Aragon blew out and she was forced to let go the San Diego and make for Boston.

After being cut adrift the barge soon opened her seams and for forty-two hours the crew kept at the pumps. When the Robin Hood finally saw the barge's distress signals, Capt. Sampson, after taking off the exhausted crew, set fire to the abandoned craft. The San Diego, which was owned by A. A. Parker of Detroit, was valued at \$18,000 and was insured for \$12,500.

### BOULDERS PICKED UP BY STEEL SHIPS.

It is a singular coincidence that two vessels managed in the office of H. H. Brown & Co. of Cleveland should meet with peculiar accidents in the nature of having huge boulders embedded in their bottoms and remain there for some time. While the steamer Fayette Brown was on the middle ground at Pelee passage, Lake Erie, last week, a boulder weighing 2,250 pounds worked its way up into her bottom 30 feet abaft the midship section and at the bilge on the port side. It was not known that the rock was there until the vessel was placed in dry dock at Detroit. Had it dropped out while the steamer was on her way up Lake Erie or the Detroit river, the hole left would have been so large a one that nothing could have prevented the vessel from sinking with five valuable pumps that had been used in releasing her. The survey made by Robert Logan of Cleveland for the owners and Capt. Hynd for the underwriters (the Prime-McCurdy syndicate) showed that she has



A GREAT ICE BREAKER—TUG W. G. MASON, BUILT BY THE JENKS SHIP BUILDING CO., PORT HURON, MICH.

Huron the building of steel vessels, very probably of medium size for a beginning. They have now in hand the work of preparing plans for a freight steamer 246 feet over all, 43 feet beam and 27 feet deep, to carry about 2200 tons and to have three gangways on each side. With a well-equipped engine works and with every facility to supply vessels with steam steerers, steam windlasses and all other similar appliances, all of their own design, this company has turned out some of the best wooden freight steamers of moderate size on the lakes, and not much of an expenditure will be required to equip their plant for the construction of steel vessels of similar type.

### ANOTHER LAKE BARGE LOST ON THE COAST.

Verification came this week of the report of the loss of the great lakes barge San Diego, off Shelburne, N. S., on the night of Dec. 15. The first authentic information was brought by the schooner Robin Hood, which arrived at Gloucester, Mass., this week, with Capt. John Mason and the crew of the lost vessel. The San Diego was one of the vessels chartered by the Atlantic Transportation Co. of New York and was en route to New York to enter the service of that company. She left Port Hawkesbury Nov. 26, in tow of the steamer Aragon, and parted her hawser in the great storm of the 27th ult. She reached La Have under her own sail, but leaking badly, and the Aragon found her there while repairing. Another start was made on Dec. 12, but three days later, when off Shelburne, N. S., at midnight, the steamer and her tow struck a northwest gale. The barge rolled terrifically, the water constantly covering her and the waves finally carried away her mast, breaking the stanchions and smashing her steering

twenty-five broken planks and twenty broken steel frames, all of which will have to be replaced.

Some three or four years ago a boulder weighing two tons became imbedded in the bottom of the steel steamer Joliet, and she made the trip from above the Sault down to Cleveland in that condition. When the vessel was placed in dry dock at Cleveland a single blow of the sledge caused the boulder to become dislodged. This big boulder was lifted from the dry dock and has since been used as a stepping-stone in front of the residence of Capt. E. Day on Detroit street, Cleveland.

Some time ago the steel steamer E. C. Pope, one of the large lake ore carriers, met with bottom damage. The accident was not thought to be of a serious nature, and by permission of the underwriters the ship went on making several trips and finished the season without docking. She was placed in dock in Cleveland a day or two ago and it was found that she will require repairs involving the removal of some fifty-five plates.

The Harlan & Hollingsworth Co., Wilmington, Del., have installed in their ship-yard a heavy punching machine, built by the Hilles & Jones Co. of that city. A special feature of this machine is that it is mounted upon a revolving turntable so that it can be faced in any direction. Driving is done by an electric motor mounted on the main frame.

Safety hollow staybolts of the kind manufactured by the Falls Hollow Staybolt Co. of Cuyahoga Falls, O., have been specified for locomotives building for the International & Great Northern Railroad by the Rogers Locomotive Co.



## LARGEST OWNERS OF STEAM TONNAGE.

An interesting table has been prepared from the latest editions of Bureau Veritas, Lloyd's Register and other authorities, giving the aggregate holdings of the twenty-one largest owners of steam tonnage throughout the world. The total gross and net tonnage is given in each case for 1898 and also for 1897. Only sea-going steamers have been considered in the computation, all small craft, such as river and harbor boats, lighters, barges, etc., having been excluded. The tonnage is in every case calculated according to the British system and is as follows:

Companies.	Number of vessels.	Gross Tonnage.	Net Tonnage.
<b>BRITISH.</b>			
British India Steam Nav. Co. (London).....	102	280,855	181,213
Last year.....	97	251,429	162,482
Peninsular & Oriental Steam Nav. Co. (London).....	58	272,756	157,076
Last year.....	60	288,140	164,836
Union Steamship Co. of New Zealand (London).....	60	87,837	53,725
Last year.....	52	65,239	39,371
Cunard Steamship Co., Limited (Liverpool).....	27	118,485	64,624
Last year.....	27	119,471	65,011
Pacific Steam Nav. Co. (Liverpool).....	36	117,938	71,435
Last year.....	41	128,336	77,774
Ismay, Imrie & Co. (White Star Line, Liverpool).....	21	126,960	76,705
Last year.....	21	114,290	68,264
T. Wilsons, Sons & Co. (Hull).....	86	180,358	116,902
Last year.....	82	159,898	103,450
Irrawaddy Flotilla Co. (Glasgow).....	42	19,930	11,970
Last year.....	42	20,393	12,367
<b>GERMAN.</b>			
Hamburg-American Packet Co. (Hamburg).....	85	425,043	261,135
Last year.....	69	286,945	174,990
North German Lloyd (Bremen).....	78	383,203	224,010
Last year.....	67	265,613	152,126
Hamburg S. American S. Nav. Co. (Hamburg).....	31	106,307	70,975
Last year.....	32	100,646	65,442
Hansa German Steamship Co. (Bremen).....	39	106,962	68,865
Last year.....	37	84,867	54,446
<b>FRENCH.</b>			
Messageries Maritimes (Marseilles).....	64	233,929	115,172
Last year.....	63	229,837	114,000
Compagnie Générale Transatlantique (Paris).....	62	157,447	67,735
Last year.....	64	166,701	72,113
<b>ITALIAN.</b>			
Navigazione Generale Italiana (Rome).....	101	183,506	113,491
Last year.....	96	171,041	105,598
<b>AUSTRIAN.</b>			
Austrian Lloyd (Trieste).....	69	148,236	88,935
Last year.....	72	146,560	87,880
<b>SPANISH.</b>			
Compañía Transatlántica (Barcelona).....	35	125,432	79,164
Last year.....	36	121,161	78,702
<b>DANISH.</b>			
United Steamship Company (Copenhagen).....	113	95,177	56,942
Last year.....	109	85,525	50,719
<b>RUSSIAN.</b>			
Russian Steam Nav. Trading Co. (Odessa).....	78	86,575	56,969
Last year.....	75	80,659	53,342
<b>TURKISH.</b>			
Idare-i Massousieh (Constantinople).....	67	55,953	34,084
Last year.....	69	57,842	35,664
<b>JAPANESE.</b>			
Nippon Yusen Kaisha (Tokio).....	84	209,617	130,539
Last year.....	68	161,698	101,383

## PROMISE OF AN ATTRACTIVE MARINE WEEKLY.

Seaboard, the well known marine weekly published by W. H. & S. W. Stanton at 129 Broad street, New York, will, with its issue for January 5, 1899, assume its former name, The Nautical Gazette, by which title it was known for the first seventeen years of its existence, or from 1871 to 1888. The size of the paper, following the tendency of the day toward compactness and handiness, will be reduced to 8 by 11 inches, which will more easily permit of filing and binding. The volume for the coming year will be an attractive one, judging from the list of features already announced. Among the longer articles will be the publication, in serial form, of "A Naval History of the United States of America," in which the whole story of our navy from the earliest times to the present will be gone over. Many illustrations will accompany the text. Articles of great interest on the fleets navigating the great lakes, the harbors that line their shores, and historical matter of a unique description, finely illustrated, are promised. Added to these a series of articles on the Mississippi river and the steamers plying on that stream and tributaries; plans and details of new warships, merchant steamers, etc., and a weekly chronicle of the leading marine events, will make the coming year of The Nautical Gazette a noteworthy one in its career.

A neat steel foot-rule of the folding type, nicely encased in leather, is being given out as an advertising specialty by the Geo. B. Carpenter Co., ship chandlers of Chicago. The Review is indebted for one of them to Mr. Walter Scott, who has been given the title of admiral and standard-bearer in the harbor department of the Carpenter company, and who has just closed up a prosperous season, laying up his bicycle with a record of 1465 miles on the banks of the Chicago and without a single grounding or the loss of even a deck load.

For a comfortable trip to New York take Pennsylvania No. 6, which leaves Union station daily at 1:40 p. m., and from Euclid avenue 1:50 p. m., arriving New York 7:43 next morning. Pullman's very best sleepers run through on this train without change. Supper is served in dining car. Note that the train stops at Euclid avenue station, saving the tedious ride down town to those living in the eastern part of the city. Phone main 1263 or east 513 for space and full information.

The Crumlish Forge Co. of Buffalo, manufacturers of portable forges, fan blowers, exhaust fans, etc., has been compelled to take up new and enlarged quarters on account of the demand for their forges, and are now located at Nos. 18 and 20 Elk street.

## TRADE NOTES—CATALOGUES.

The business of the Chicago branch of the J. A. Fay & Egan Co. has been purchased by Manning, Maxwell & Moore, who will occupy the quarters of the former firm at 22-26 South Canal street. It is reported that Manning, Maxwell & Moore will occupy the whole building—four stories and basement.

The New Kentucky Coal Co. of Chicago announces that on Jan. 1 they will remove from their present quarters in the Marquette building to suite 707-9, Fisher building. This firm is already engaged in the business of fueling steamboats, and expects to undertake an extensive business in this line next season.

Catalogue "P," lately issued by the Hilles & Jones Co. of Wilmington, Del., is an elaborate publication and yet it is not intended as a general catalogue, but to illustrate and briefly describe a few representative machines for various purposes, from which persons interested will obtain a fair idea of the range of the firm's production. It contains thirty-two pages of fine half-tone illustrations of punches, shears, rolls, etc. The cover has the air of a Christmas greeting, being a very pretty holly design.

The I. & C. Co. of Chicago, who a short time ago purchased the pneumatic tool manufacturing plant of the Ridgely & Johnson Tool Co. of Springfield, Ill., has lately issued a very handsome catalogue of pneumatic tools. The book is taken up for the most part with an article, the general purpose of which is to present points for consideration in selecting pneumatic tools of proper weight and rapidity of stroke for different purposes in metal working shops. The catalogue is profusely illustrated and gives a large number of photographed testimonials from users of the Ridgely & Johnson tools.

One of the newest ideas in high class publications from manufacturing concerns is the Buffalo Forge Co.'s "American Schools of Mechanical Technology." It is a beautifully gotten up book of 145 pages, containing elegant half-tone illustrations of the exterior and interior of a large number of schools of mechanical technology, machine shops and other establishments in which the different specialties of the Buffalo Forge Co. are to be found. A few pages are devoted to illustrating the engines and down-draft forges made in the Buffalo works. No heavy display advertising is used, the book being more of the style of a souvenir. It is certainly a credit to the company and especially to Mr. Lake, the general manager, who designed the book. The Buffalo Forge Co. was recently awarded the contract for the 100 horse power direct connected high speed engine for the Morse Wool Treating Co. of Norton, Mass. The engine is to be used for electric lighting purposes, and the contract was placed through the Northern Engineering Co. of New York.

## Marine Boilers For Sale.

Two fire-box boilers, 8½ by 16 feet; in good condition; allowed 100 pounds steam. For further particulars address E. G. CROSBY & CO., Muskegon, Mich.

Jan. 12

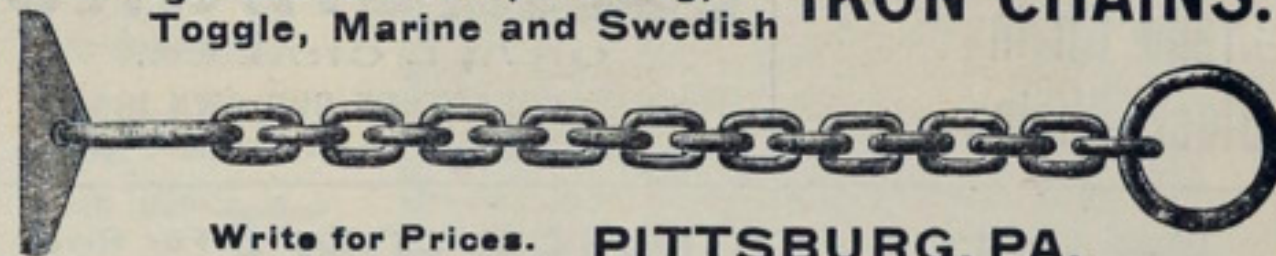
## WANTED—Triple Expansion Engine

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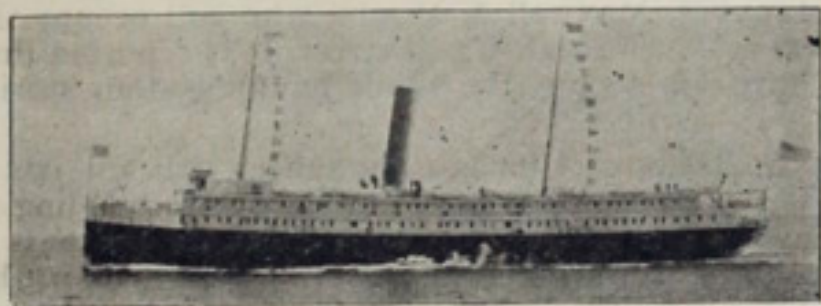
PROPOSALS FOR STEEL HULLED STEAM TENDERS. U. S. Engineer Office, Custom House, St. Louis, Mo., December 14, 1898. Sealed proposals for construction of three steel hulled steam tenders will be received here until 12 M., January 14, 1899, and then publicly opened. Information furnished on application. Thos. H. Handbury, Major, Eng'rs. Jan. 5

U. S. ENGINEER OFFICE, Duluth, Minn., Dec. 10, 1898. Sealed proposals for furnishing 12,000 barrels of Portland cement for the concrete superstructure for piers for Duluth ship canal will be received here until noon, Jan. 10, 1899, and then publicly opened. Information furnished on application. Clinton B. Sears, Major, Engrs. J a n 5

SEALED PROPOSALS will be received at the office of the Light House Engineer, Buffalo, N. Y., until 12 o'clock M., Friday, January 20, 1899, and then opened, for complete construction and erection of a duplicate steam fog signal house and apparatus at Presqu'île, Erie Harbor, Pa. All information may be had upon application to Thomas W. Symons, Major, Corps of Engineers, U. S. A. Dec. 22



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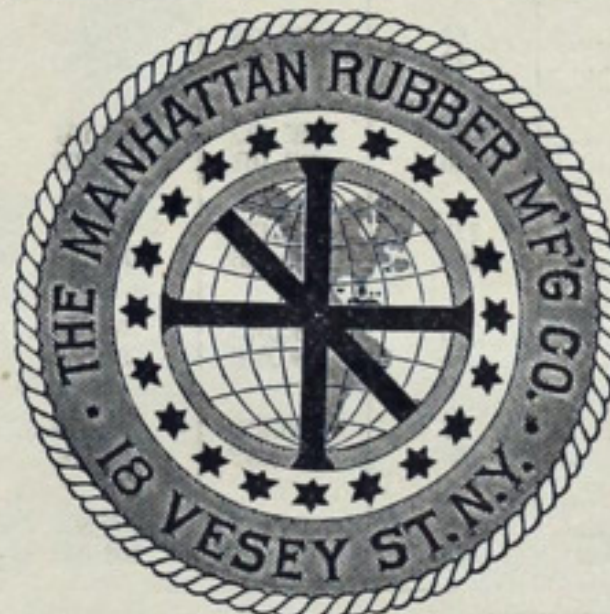
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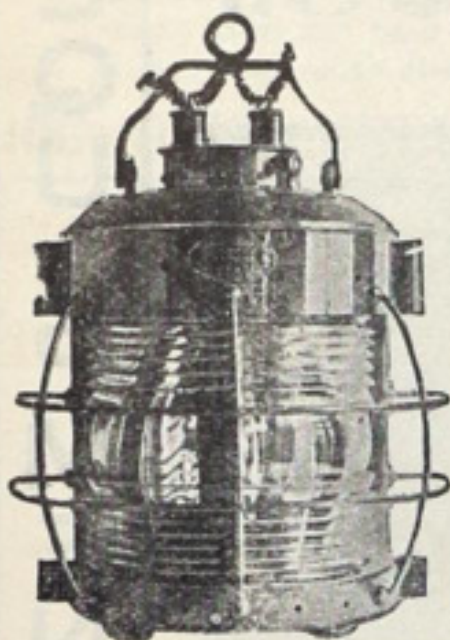
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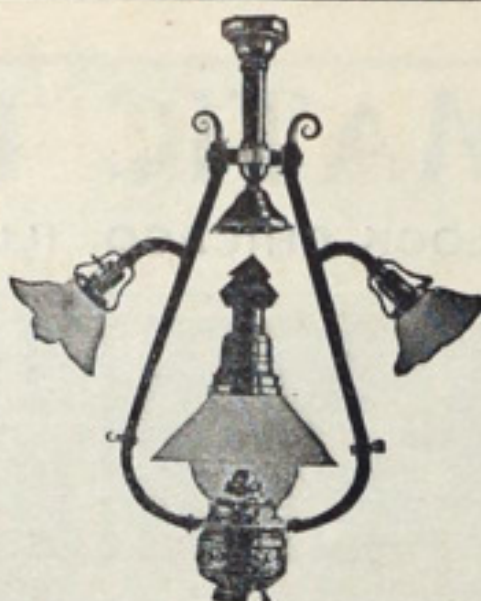


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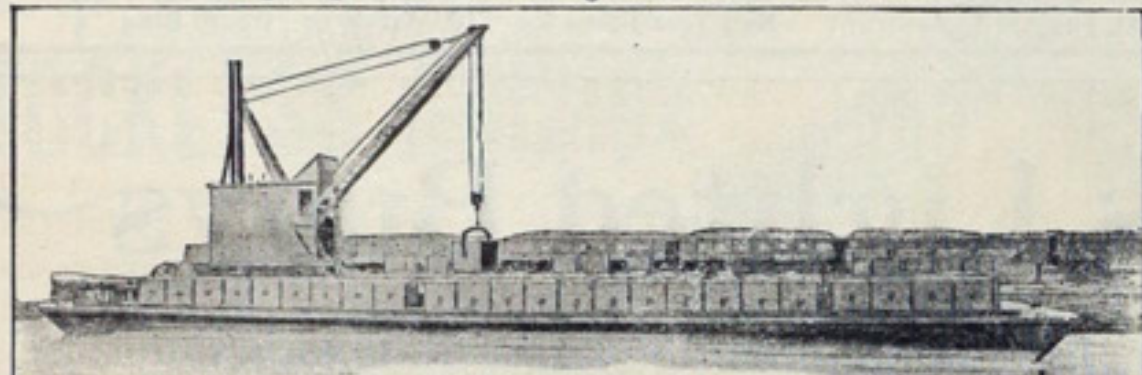
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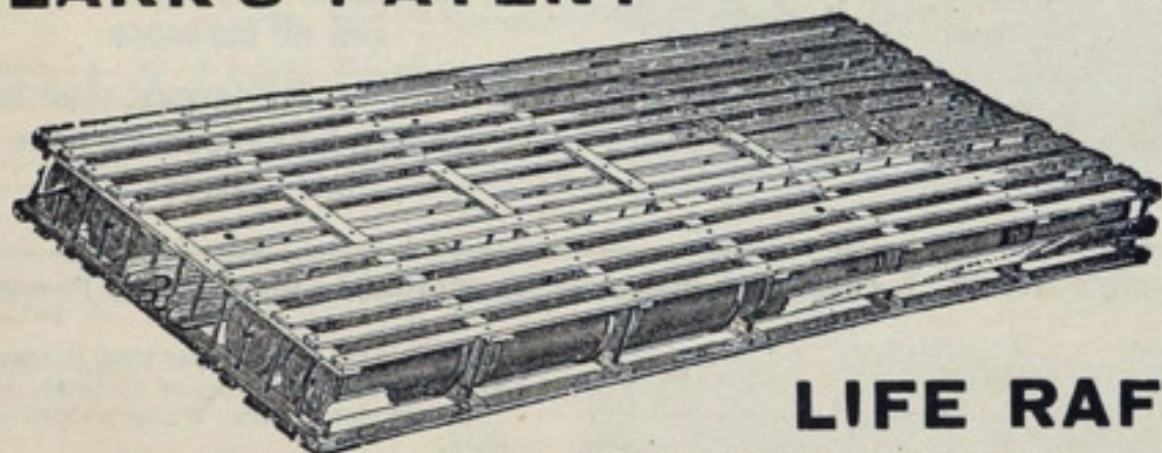
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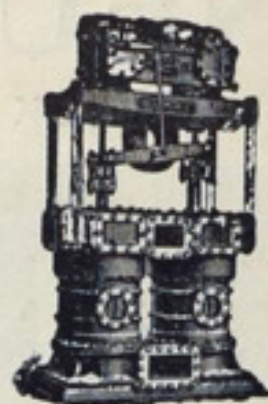
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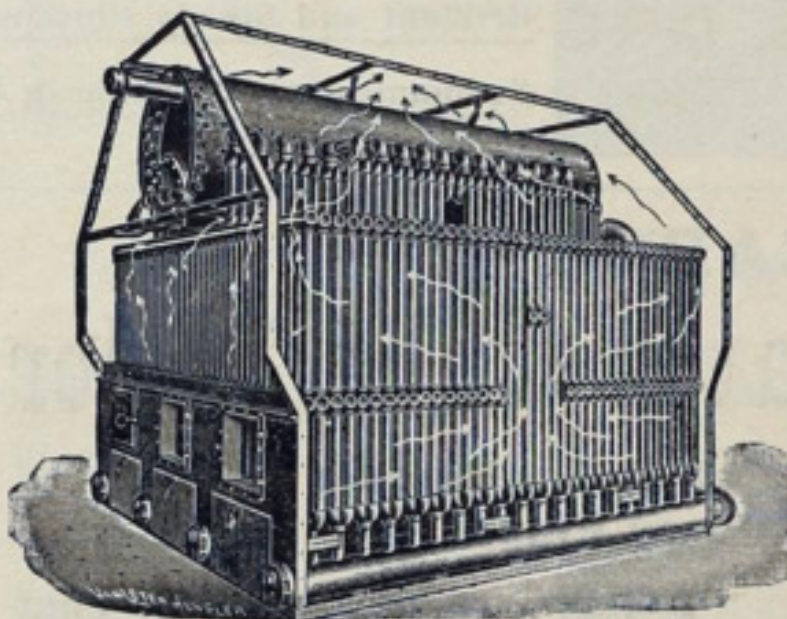
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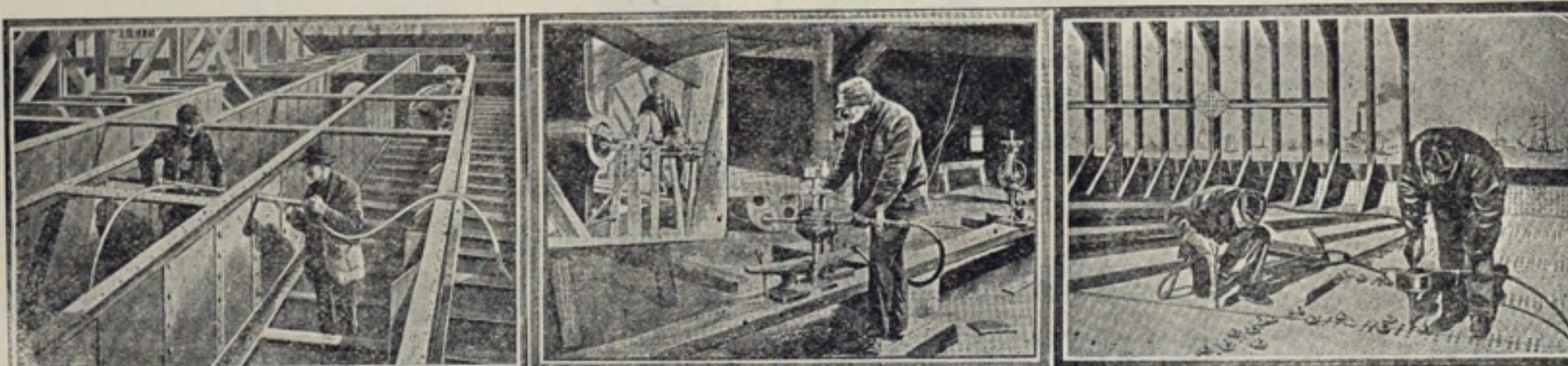
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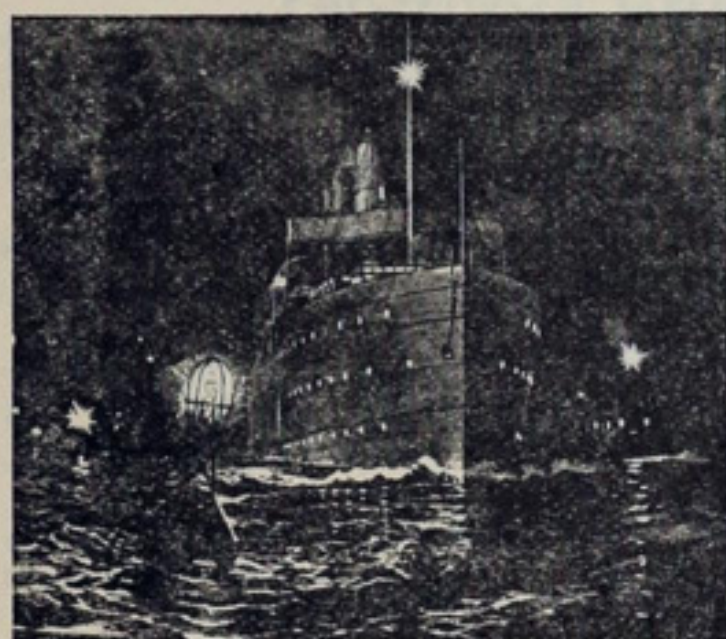
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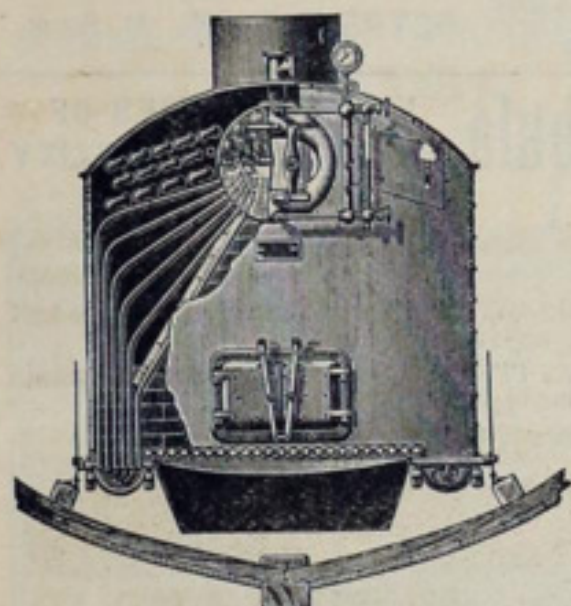
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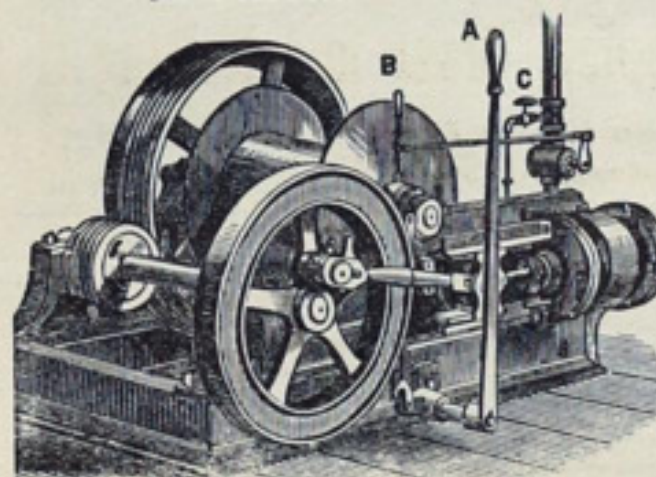
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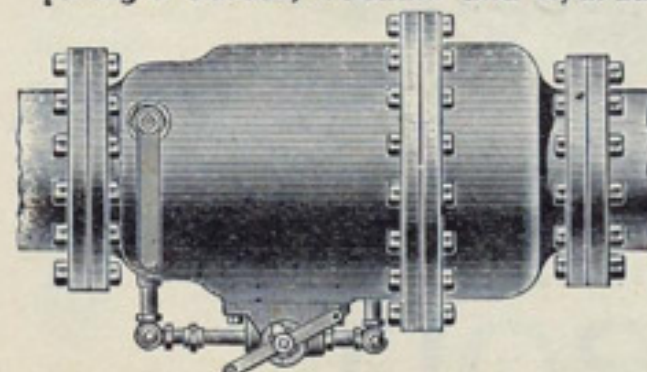


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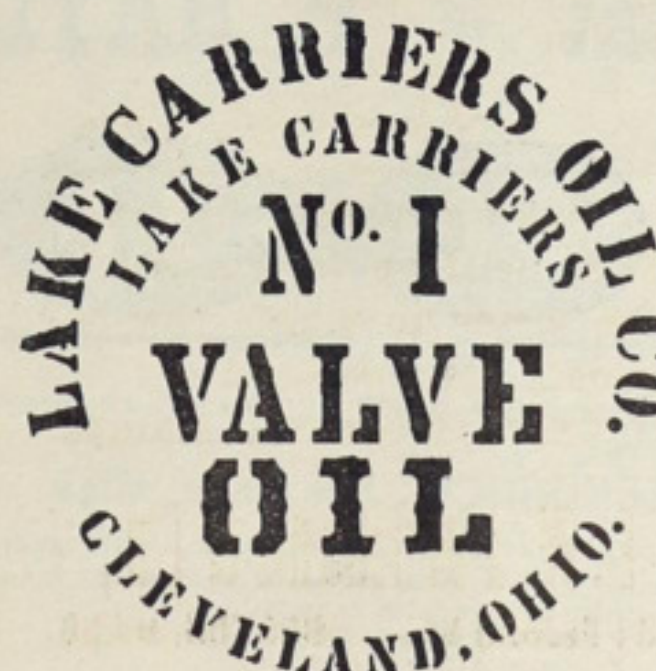
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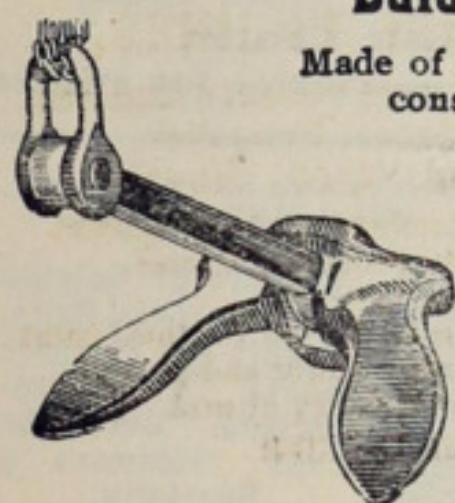
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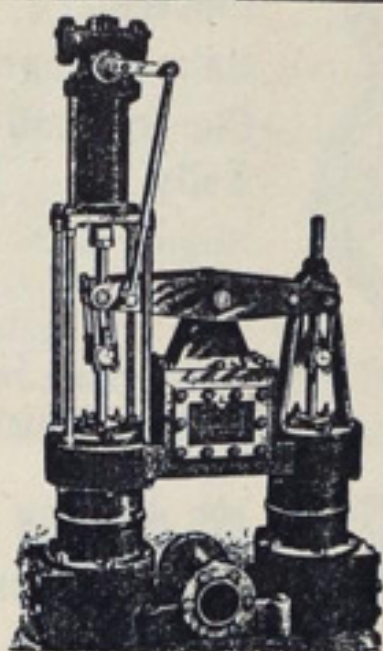
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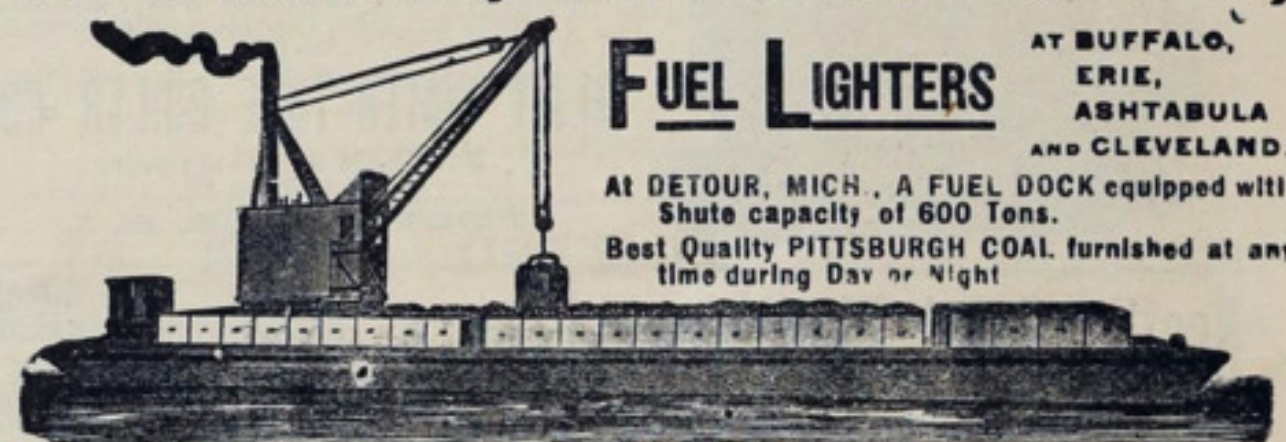
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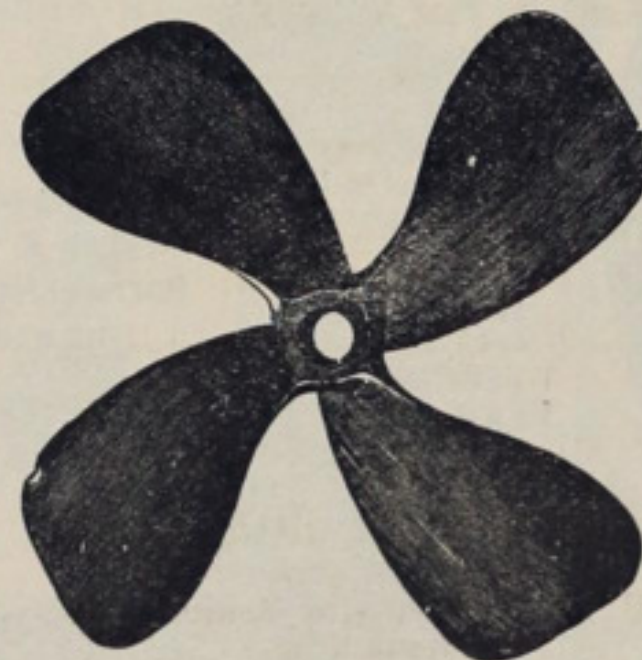
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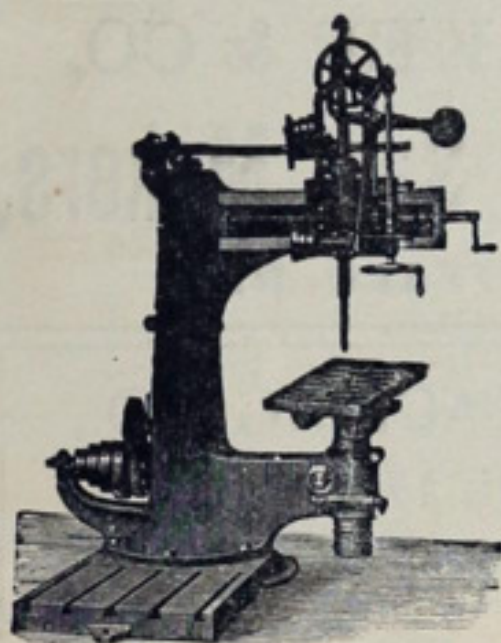
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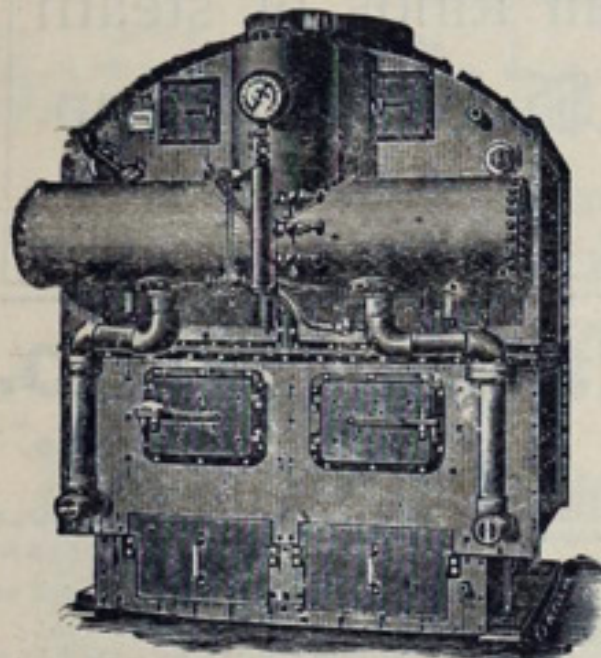
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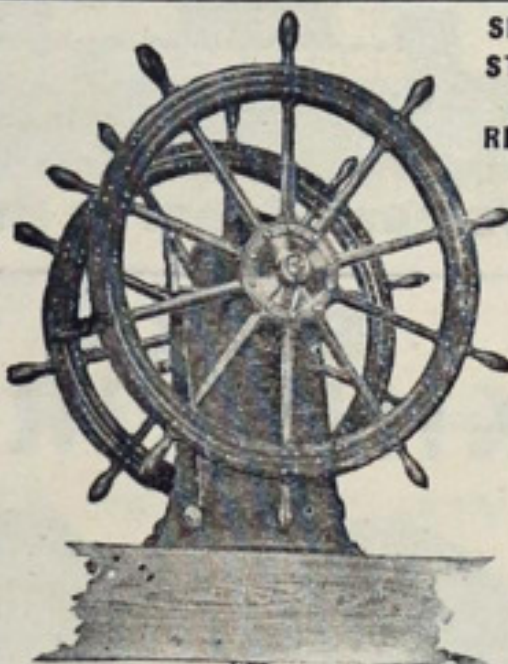
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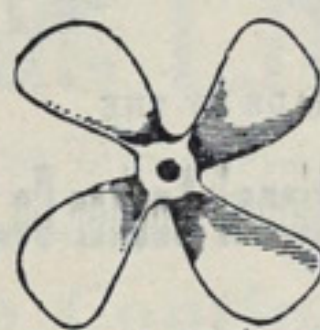
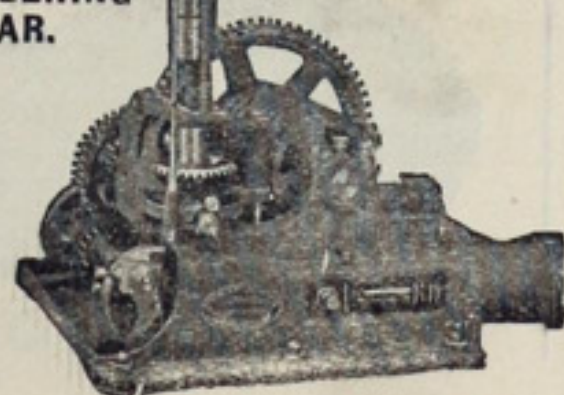


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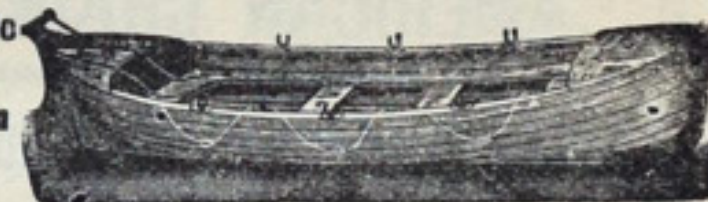
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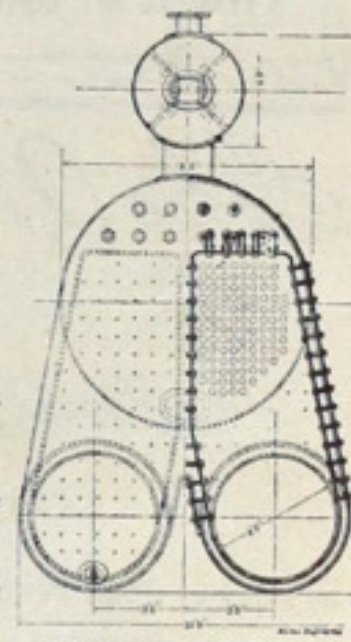
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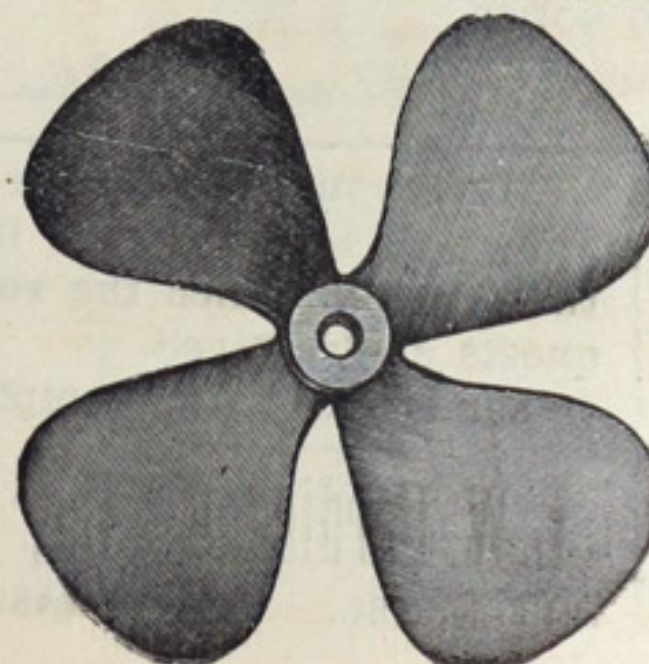
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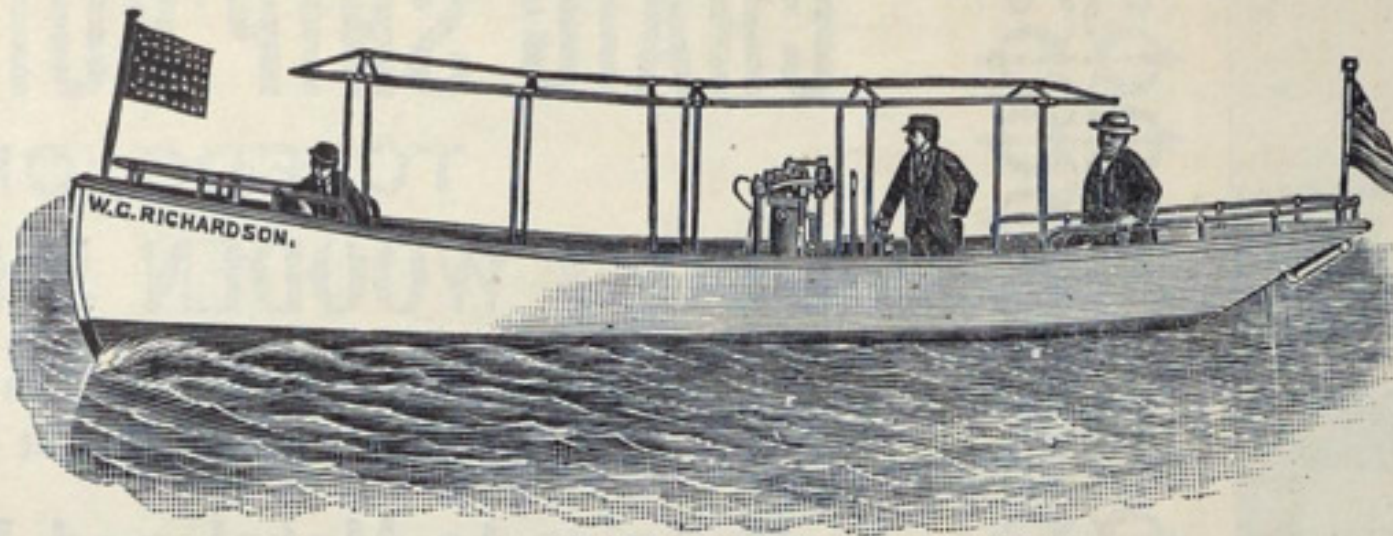


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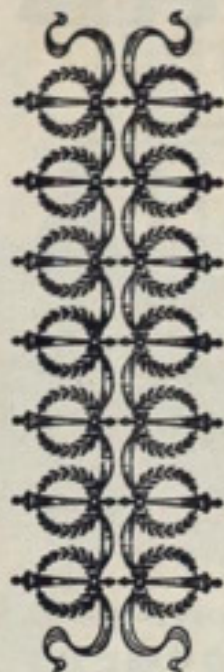
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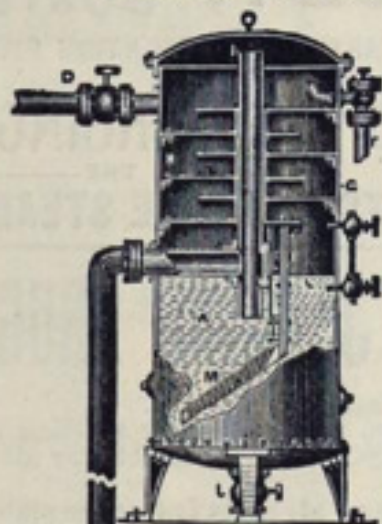
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See accompanying index of advertisers for full addresses of concerns in this directory.

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Cleveland Ship Building Co. .... Cleveland.  
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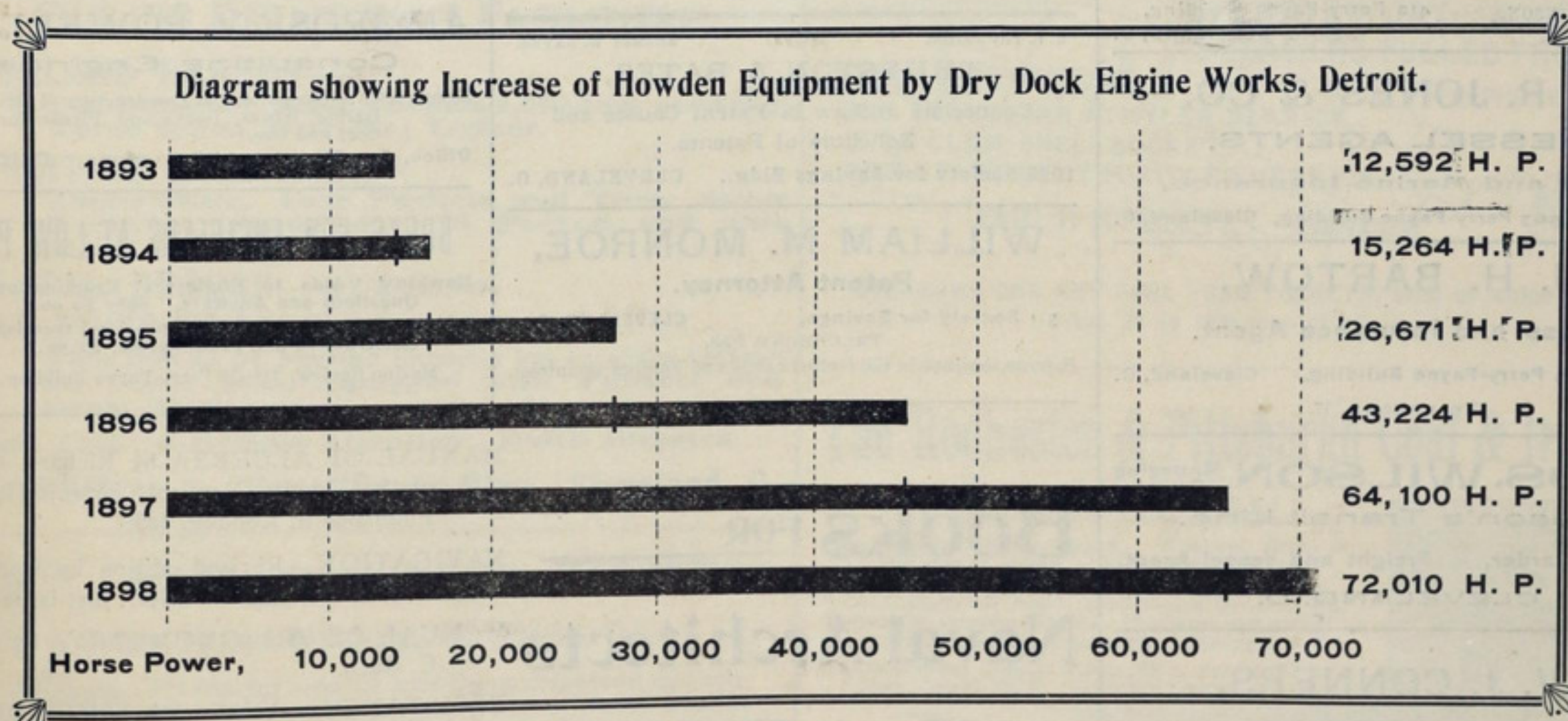
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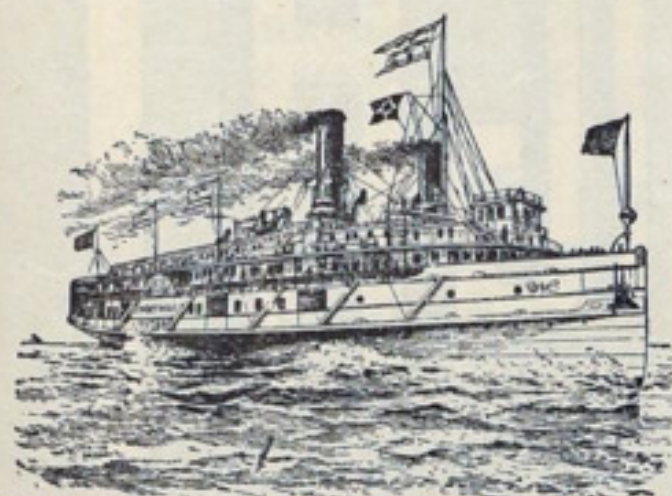
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STEAMERS CAN GET FUEL FROM POCKETS, each of which contains from 25 to 150 tons at all times.

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### REYNOLDSVILLE COAL.

Steamboat Fuel Dock. Blackwell Canal at Michigan St. Bridge. 1400 feet dock frontage.

Steam Elevator and 4 Steam Derricks. Steam Fuel Scow, Capacity 550 Tons. Boats Coaled Day or Night. Modern Car Dumping Machine; 18 cars per hour capacity.

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Capt. WM. H. HAZEN,

Dock  
Superintendent.







## Electric Light and Power Plants

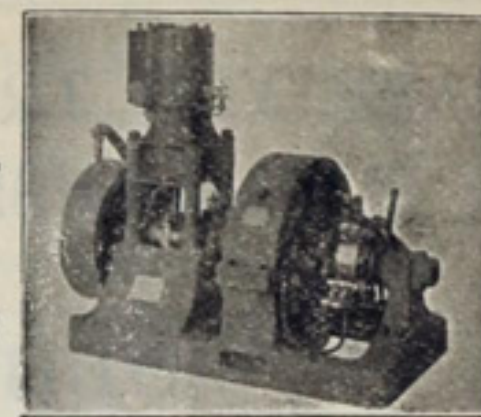
FOR STEAMSHIPS, YACHTS, DOCKS, WHARVES, WAREHOUSES, ETC.

DYNAMO AND ENGINE ON ONE BASE.

ELECTRIC HOISTS. WINCHES AND PUMPS. SEARCH LIGHTS.

GENERAL ELECTRIC COMPANY, Schenectady, N. Y.

Also Offices on the principal Lakes and Seaports of the United States.



# WELLS LIGHT

EDWARD ROBINSON, SOLE PROPRIETOR  
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**12,000 IN USE.**  
ESPECIALLY ADAPTED FOR  
CONTRACTORS, QUARRIES, SHOVELS,  
RAILROAD CONSTRUCTION, DREDGES,  
BRIDGE & DOCK BUILDERS, WATER  
WORKS, BRICK YARDS & COAL DOCKS.

800, 2,000 TO 4,000  
CANDLE POWER FROM KEROSENE OIL.  
PORTABLE, SELF-CONTAINED, AUTOMATIC.  
UNAFFECTED BY WEATHER.  
400 RAILROADS  
AND OVER 500 CONTRACTORS NOW USE WELLS LIGHT.

## MODERN MACHINE TOOLS FOR SHIP YARDS / HILLES & JONES CO.,

SEND FOR CATALOGUE

QUICK RUNNING PUNCHES, BENDING ROLLS,  
PLATE SHEARS, ANGLE SHEARS, PLATE PLANERS.

912 CHURCH STREET,  
WILMINGTON,  
DELAWARE.

## THE FASTEST BOAT IN THE NAVY.

The Torpedo Boat Destroyer FARRAGUT, on her official trial, steams over THIRTY KNOTS.

## THE ENGINE FORGINGS AND SHAFTING

for this Boat were manufactured by

# The Bethlehem Iron Company,

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Branch Offices: { 100 Broadway, New York.  
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HOLLOW STAYBOLTS are better than drilled or punched in every way. Cost less too. They save inspections and explosions—warn automatically. If you want solid staybolts, however, let us hear from you. Our circulars and prices will interest you.

FALLS HOLLOW STAYBOLT CO., CUYAHOGA FALLS OHIO.

## LIDGERWOOD IMPROVED

HOISTING ENGINES.

OVER 14,000 IN USE.

## ELECTRIC HOISTS

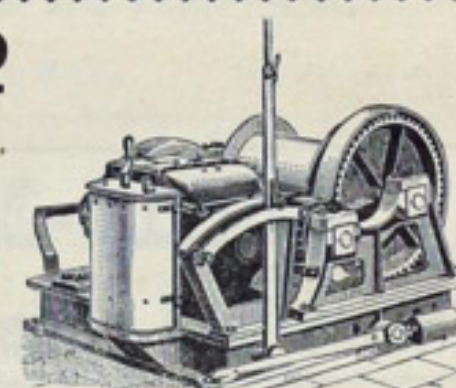
Specially adapted for Docks, Warehouses and Steamships.....

Simple, Light and Compact.

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Engineers and Machinists,

MANUFACTURERS, UNDER THE CHASE PATENTS OF

FOG WHISTLE MACHINES, HOISTING ENGINES,  
STEERING ENGINES, AUTOMATIC TOWING ENGINES,  
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MARINE ENGINES,  
PROPELLER WHEELS,  
DECK HOISTERS,  
MARINE REPAIRS.  
320 ATWATER STREET,  
DETROIT, MICH.

After 20,000 miles of almost continuous steaming since going into commission, including her remarkable trip from San Francisco to Key West, the U. S. Gunboat MARIETTA, equipped with Babcock & Wilcox water tube boilers, ordered the following repair parts:

"T. B. S.—W. D. L.

NAVY DEPARTMENT,  
Bureau of Supplies and Accounts,  
Washington, D. C.

In reply refer to No. 29181.

Gentlemen:

June 10, 1898.

1. Please forward to the Commanding Officer, U. S. S. 'MARIETTA', Key West, Fla., 8 fire bricks, 4 rights and 4 lefts, No. R. 3440, Babcock & Wilcox boilers, to replace broken bricks between furnace doors.

2. Your bill for these articles should be sent to the same officer and should refer to Steam Engineering Requisition dated June 1, 1898.

THE BABCOCK & WILCOX CO.,  
29 Cortlandt St., New York."

Respectfully,

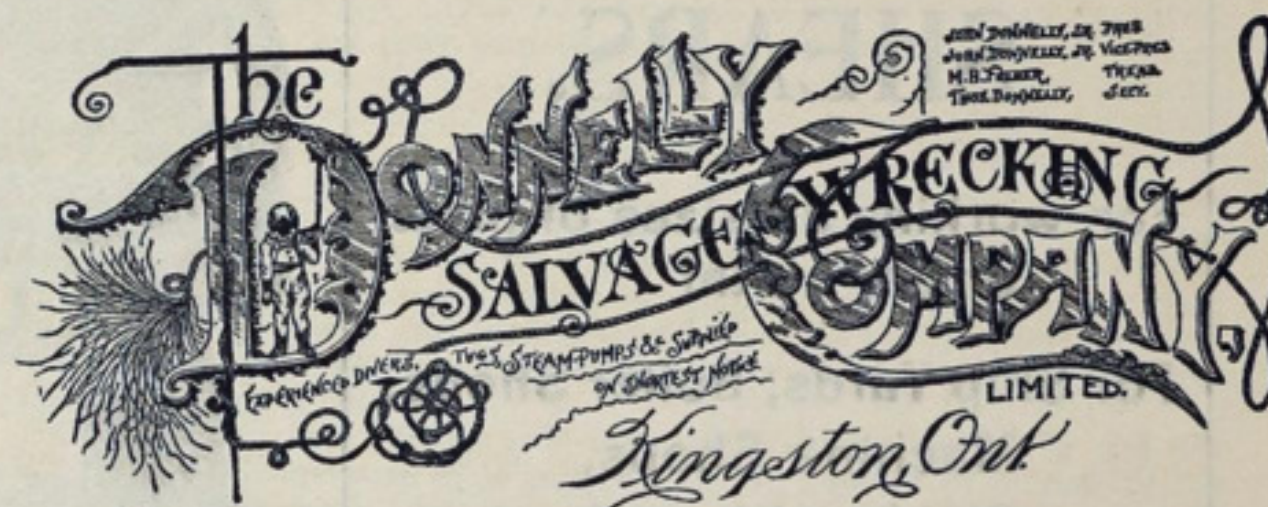
(Sig.) EDWIN STEWART, Paymaster General,  
U. S. N.

On her long voyage the MARIETTA was not detained an instant on account of boilers.

THE BABCOCK & WILCOX CO., WATER TUBE BOILERS, 29 Cortlandt St., New York.

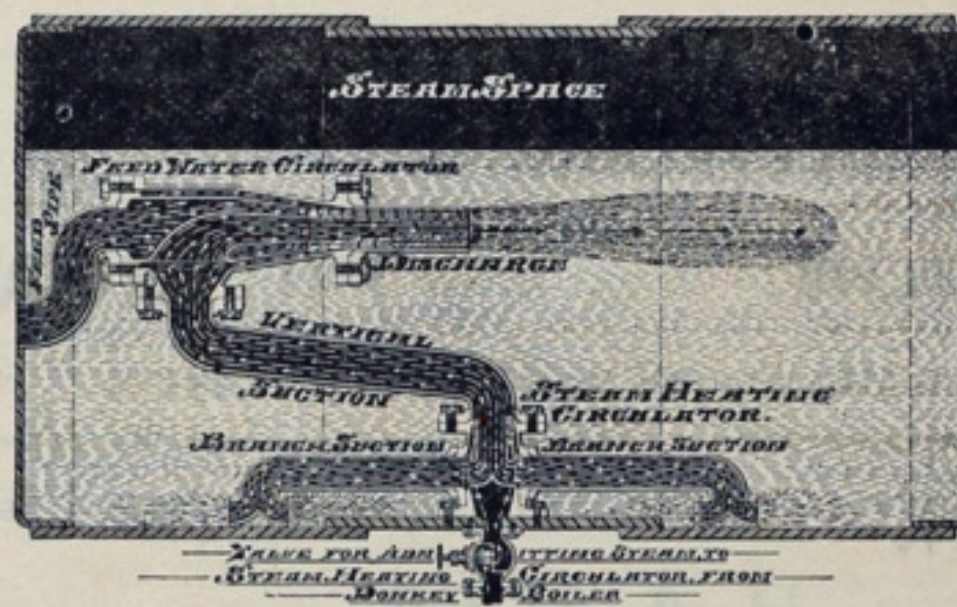


IRON OR STEEL FORGINGS FINISHED COMPLETE, ROUGH MACHINED OR SMOOTH FORGED ONLY, OF ANY WEIGHT. COUPLING LINKS AND PINS. PRESSED WROUGHT IRON TURNBUCKLES. CAR IRON SPECIALTIES.



## The Equilibrium Circulator and Steam Heating Attachment

FOR HEATING AND CIRCULATING THE WATER IN STEAM BOILERS.



Increases evaporation 5% to 15%.

Will pay for itself in a year with saving in repairs.

Keeps all parts of boiler at an even temperature.

Has no extra joints to leak.

Creates a constant automatic circulation as long as boiler is fed.

The Steam Heating Attachment will heat and circulate the water with steam from donkey boiler in a half hour, while fires are being started, and be ready for steam with less straining than slow fires burning twelve hours.

H. BLOOMSBURG & CO., 112 35th Street, NEWPORT NEWS, VA.

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TUGS	RITA McDONALD,	G. A. TOMLINSON,	WM. DICKINSON,	COMMODORE,	TUGS
	CRAWFORD,	D. P. HALL,	IRA D. SMITH,	WELCOME,	
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Telephone 273. 240 South Water St.

SOUTH CHICAGO OFFICE:  
92d Street Bridge

Tugs G. A. TOMLINSON, D. P. HALL and PRODIGY  
in service at SOUTH CHICAGO at all times.

3 long whistles call our tugs.

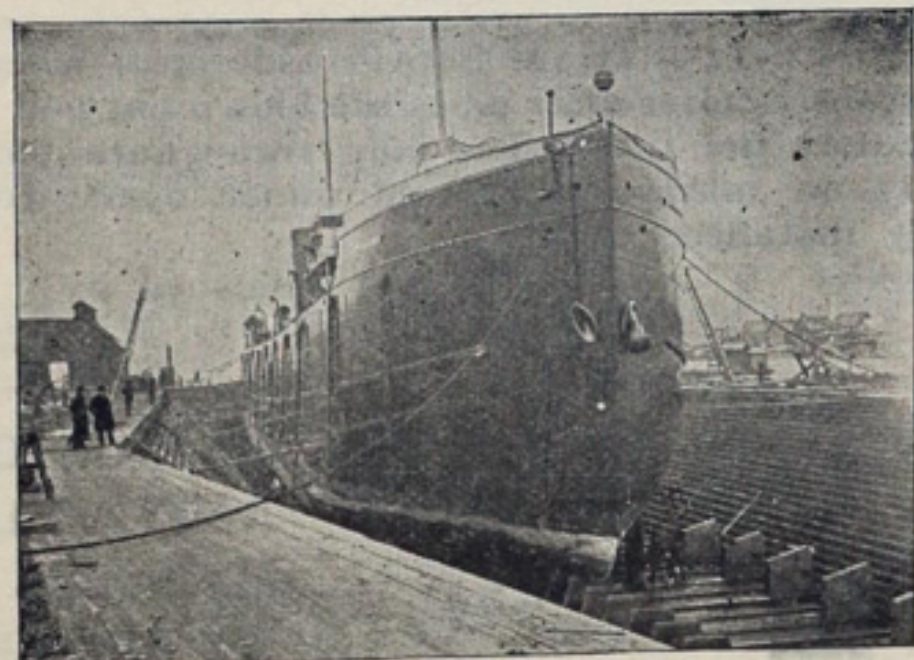
Offices open day and night.

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### STEEL and METAL SHIPS

Of all classes built on the Shortest Possible Notice at our yards at  
**West Superior, Wis., and also at Everett, Wash.**

Plates & Material  
Always  
on hand  
to Re-  
pair all  
kinds of  
Metal  
Ships in  
Shortest  
Time.



Best  
Quality  
of Oak  
instock  
for Re-  
pairing  
Wooden  
Vessels  
of all  
Classes.

#### SIZE OF DOCK.

Length, extreme.....537 feet.	Entrance, Top.....55 feet 9 in
Breadth, Top ..... 90 " 4 in.	Entrance, Bottom.....50 "
Breadth, Bottom ..... 52 "	Depth over Sills .....18 "

### LARGEST DRY DOCK ON THE LAKES.

Prices for Repairs and Docking same as at lower lake ports

### SUPERIOR, WIS.

A number of Propeller Wheels in stock at Dry Dock.

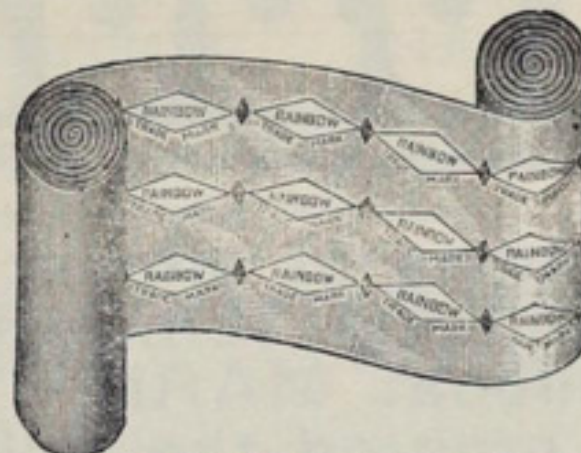


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## RAINBOW PACKING.



Thousands of  
Imitators.  
No Equal.  
Will Hold  
Highest Pressure.



Don't have to use wire  
and cloth to hold.

RAINBOW.  
Can't blow it out.

LOOK OUT FOR IMPOSTERS.

Commencing December 1st, we use Three Rows of DIAMONDS IN BLACK extending throughout the entire length of each and every roll

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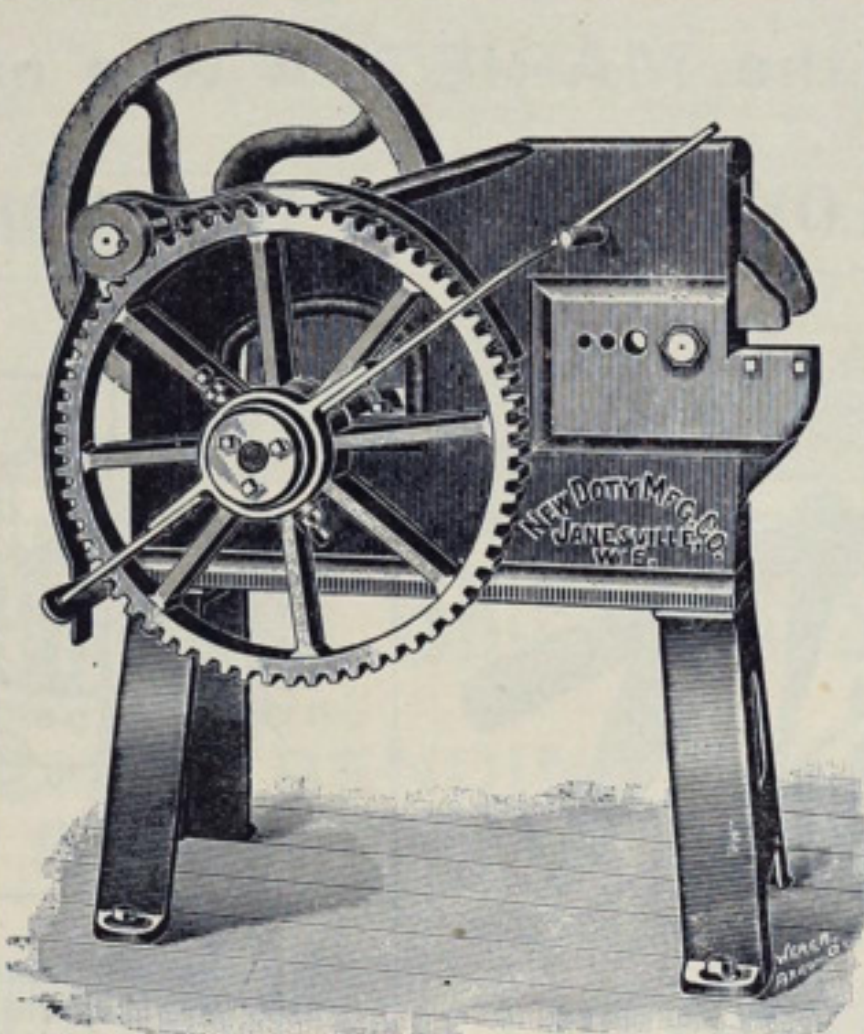
17-19 Beale Street, and 18-24 Main Street,  
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For working all sizes of plate  
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For Ship Yards, Boiler Shops,  
Machine Shops,  
Blacksmith and  
Forge Shops, &c., &c.

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HAND AND  
BELT POWER

Punches and  
Shears,

And Bending Rolls.

**NEW DOTY MFG. CO.**

Janesville, Wisconsin,  
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**BAR IRON.**

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ARCHES AND STRAPS FOR WOODEN VESSELS.

BOILER RIVETS. BOILER TUBES. BRACE IRON.  
IRON AND STEEL SHEETS. MACHINERY AND TOOL STEEL.  
BESSEMER AND OPEN HEARTH STEEL.  
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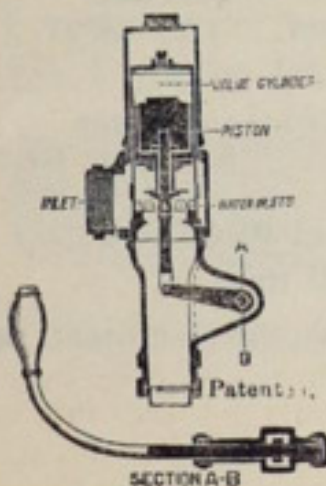
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An Appliance that takes the place of the  
noisy and dirty overhead flush-tank.  
THE BEST SYSTEM EVER INVENTED  
FOR USE ON STEAM VESSELS.

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Used by the U. S. War and Navy Departments—Transports Mohawk  
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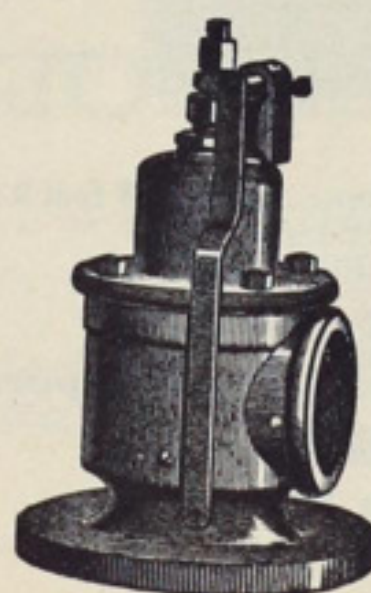
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**THE HEINTZ STEAM TRAP** wide open when cold—in-  
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perfectly on marine work and under every condition, if  
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CROSBY POP SAFETY VALVES, Locomotive,  
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CROSBY STEAM ENGINE INDICATORS, with  
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The Original SINGLE BELL CHIME WHISTLES.  
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